GA-8N-SLI QUAD Royal

Intel® Pentium® Processor Extreme Edition
Intel® Pentium® D / Pentium® 4 LGA775 Processor Motherboard

User's Manual

Rev. 1002
12ME-8NSLIQU-1002R



* The WEEE marking on the product indicates this product must not be disposed of with user's other household waste and must be handed over to a designated collection point for the recycling of waste electrical and electronic equipment!!
* The WEEE marking applies only in European Union's member states.

Declaration of Conformity

We, Manufacturer/Importer
(full address)

G.B.T. Technology Trading GMbH
Ausschlager Weg 41, 1F 20537 Hamburg, Germany

declare that the product
(description of the apparatus, system, installation to which it refers)

Motherboard
GA-8N-SLI QUAD Royal
is in conformity with
(reference to the specification under which conformity is declared)
in accordance with 89/336 EEC-EMC Directive

☐ **EN 55011**	Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) high frequency equipment	☒ **EN 61000-3-2**	Disturbances in supply systems caused
		☒ **EN 61000-3-3**	Disturbances in supply systems caused by household appliances and similar electrical equipment "Voltage fluctuations"
☐ **EN 55013**	Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment	☒ **EN 55024**	Information Technology equipment-Immunity characteristics-Limits and methods of measurement
☐ **EN 55014-1**	Limits and methods of measurement of radio disturbance characteristics of household electrical appliances, portable tools and similar electrical apparatus	☐ **EN 50082-1**	Generic immunity standard Part 1: Residual, commercial and light industry
		☐ **EN 50082-2**	Generic immunity standard Part 2: Industrial environment
☐ **EN 55015**	Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaries	☐ **EN 55014-2**	Immunity requirements for household appliances tools and similar apparatus
☐ **EN 55020**	Immunity from radio interference of broadcast receivers and associated equipment	☐ **EN 50091- 2**	EMC requirements for uninterruptible power systems (UPS)
☒ **EN 55022**	Limits and methods of measurement of radio disturbance characteristics of information technology equipment		
☐ **DIN VDE 0855** ☐ **part 10** ☐ **part 12**	Cabled distribution systems; Equipment for receiving and/or distribution from sound and television signals		

☒ **CE marking** CE (EC conformity marking)

The manufacturer also declares the conformity of above mentioned product with the actual required safety standards in accordance with LVD 73/23 EEC

☐ **EN 60065**	Safety requirements for mains operated electronic and related apparatus for household and similar general use	☐ **EN 60950**	Safety for information technology equipment including electrical business equipment
☐ **EN 60335**	Safety of household and similar electrical appliances	☐ **EN 50091-1**	General and Safety requirements for uninterruptible power systems (UPS)

Manufacturer/Importer

(Stamp)

Date : Nov. 16, 2005

Signature : *Timmy Huang*

Name : Timmy Huang

DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2.1077(a)

Responsible Party Name: G.B.T. INC. (U.S.A.)

Address: 17358 Railroad Street
City of Industry, CA 91748

Phone/Fax No: (818) 854-9338/ (818) 854-9339

hereby declares that the product

Product Name: Motherboard

Model Number: GA-8N-SLI QUAD Royal

Conforms to the following specifications:

FCC Part 15, Subpart B, Section 15.107(a) and Section 15.109 (a),Class B Digital Device

Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful and (2) this device must accept any inference received, including that may cause undesired operation.

Representative Person's Name: ERIC LU

Signature: *Eric Lu*

Date: Nov. 16, 2005

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Product Manual Classification

In order to assist in the use of this product, Gigabyte has categorized the user manual in the following:

- For quick installation, please refer to the "Hardware Installation Guide" included with the product.
- For detailed product information and specifications, please carefully read the "Product User Manual".
- For detailed information related to Gigabyte's unique features, please go to "Technology Guide" section on Gigabyte's website to read or download the information you need.

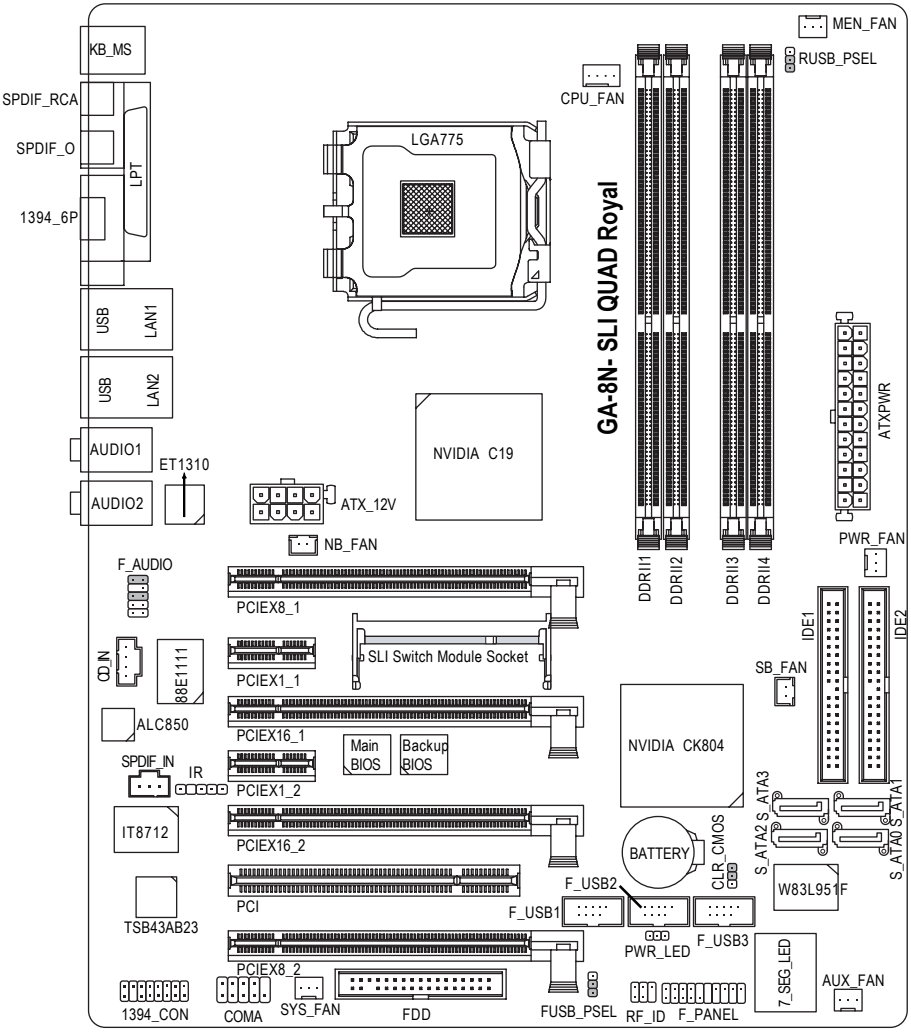
For more product details, please click onto Gigabyte's website at www.gigabyte.com.tw

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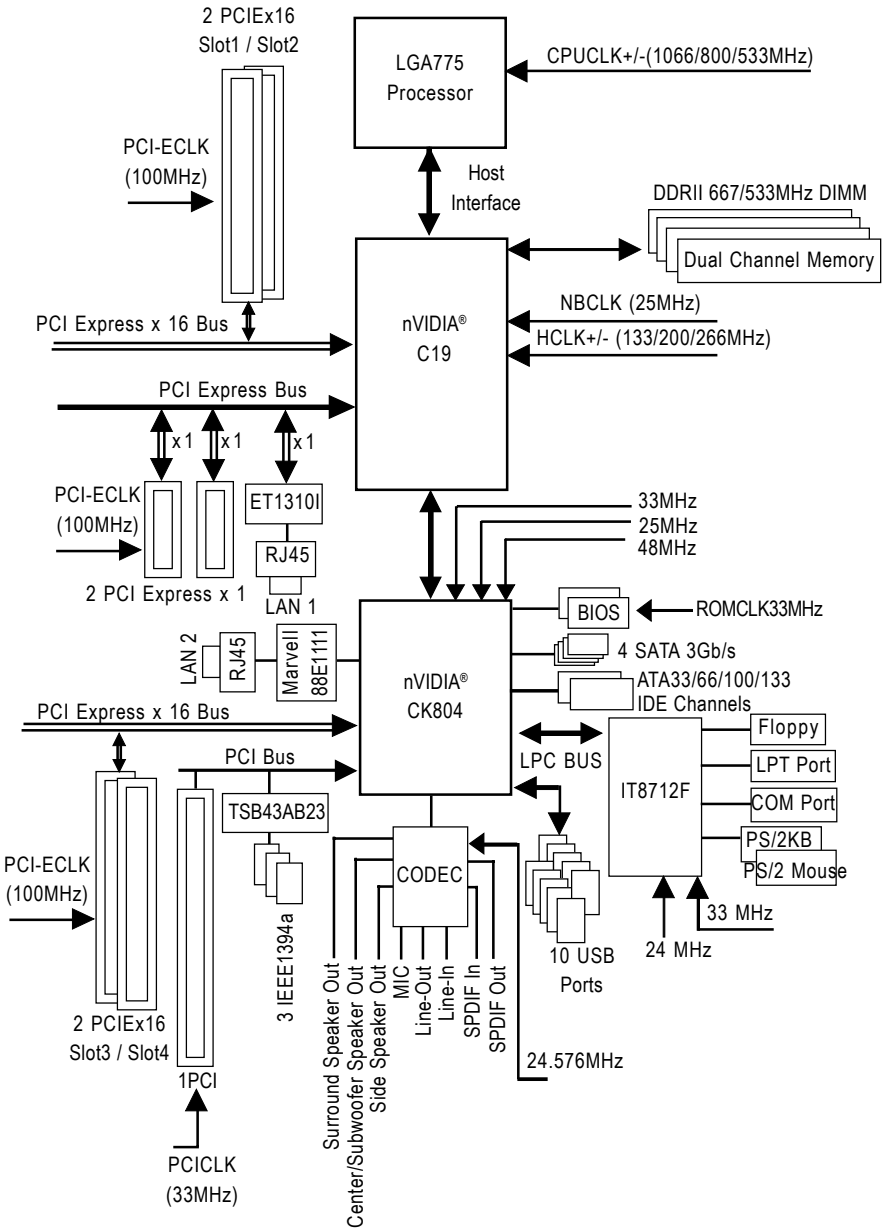
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GA-8N-SLI QUAD Royal Motherboard Layout



Block Diagram



Chapter 1 Hardware Installation

1-1 Considerations Prior to Installation

Preparing Your Computer

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Thus, prior to installation, please follow the instructions below:

1. Please turn off the computer and unplug its power cord.
2. When handling the motherboard, avoid touching any metal leads or connectors.
3. It is best to wear an electrostatic discharge (ESD) cuff when handling electronic components (CPU, RAM).
4. Prior to installing the electronic components, please have these items on top of an antistatic pad or within a electrostatic shielding container.
5. Please verify that the power supply is switched off before unplugging the power supply connector from the motherboard.

Installation Notices

1. Prior to installation, please do not remove the stickers on the motherboard. These stickers are required for warranty validation.
2. Prior to the installation of the motherboard or any hardware, please first carefully read the information in the provided manual.
3. Before using the product, please verify that all cables and power connectors are connected.
4. To prevent damage to the motherboard, please do not allow screws to come in contact with the motherboard circuit or its components.
5. Please make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
6. Please do not place the computer system on an uneven surface.
7. Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
8. If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

Instances of Non-Warranty

1. Damage due to natural disaster, accident or human cause.
2. Damage as a result of violating the conditions recommended in the user manual.
3. Damage due to improper installation.
4. Damage due to use of uncertified components.
5. Damage due to use exceeding the permitted parameters.
6. Product determined to be an unofficial Gigabyte product.

1-2 Feature Summary

CPU	◆ Supports LGA775 Intel® Pentium® Processor Extreme Edition/ Pentium® D / Pentium® 4 ◆ Supports 1066/800/533MHz FSB ◆ L2 cache varies with CPU
Chipset	◆ Northbridge: nVIDIA® nForce 4 SLI Intel Edition (Crush 19) ◆ Southbridge: nVIDIA® CK804 ◆ Supported on the Win 2000/XP operating systems
Memory	◆ 4 DDR II DIMM memory slots (supports up to 4 GB memory) ◆ Supports dual channel DDR II 667/533 unbuffered DIMM ◆ Supports 1.8V DDR II DIMM
Slots	◆ 4 PCI Express x 16 slots ◆ 2 PCI Express x 1 slots ◆ 1 PCI slots
IDE Connections	◆ 2 ports from CK804 (IDE1/IDE2) (UDMA 33/ATA 66/ATA 100/ATA 133), allows connection of 4 IDE devices - Supported on the Win 2000/XP operating systems
FDD Connections	◆ 1 FDD connection, allows connection of 2 FDD devices
Onboard SATA 3Gb/s	◆ 4 SATA 3Gb/s ports: 4 ports from CK804 controller (SATA0, SATA1, SATA2, SATA3) - Supported on the Win 2000/XP operating systems
Peripherals	◆ 1 parallel port supporting Normal/EPP/ECP mode ◆ 1 Serial port (COMA) ◆ 10 USB 2.0/1.1 ports (rear x 4, front x 6 via cable) ◆ 3 IEEE1394a connectors (requires cable) ◆ 1 front audio connector ◆ 1 PS/2 keyboard port ◆ 1 PS/2 mouse port
Onboard LAN	◆ Onboard Agere ET1310 chip (10/100/1000 Mbit) (LAN1) ◆ Onboard Marvell 88E1111 phy (10/100/1000 Mbit) (LAN2) - Supported on the Win 2000/XP operating systems ◆ 2 RJ45 ports

Onboard Audio	◆	ALC850 CODEC
	◆	Supports 2 / 4 / 6 / 8 channel audio
	◆	Supports Line In ; Line Out (Front Speaker Out) ; MIC ; Surround Speaker Out (Rear Speaker Out) ; Center/Subwoofer Speaker Out ; Side Speaker Out connection
	◆	SPDIF_IN connection
	◆	SPDIF_Out (optical+coaxial) connection
	◆	CD_IN connection
I/O Control	◆	IT8712F
Hardware Monitor	◆	System voltage detection
	◆	CPU / NB / Power IC / temperature detection
	◆	CPU / System / Power / Auxilliary / Memory fan speed detection
	◆	CPU warning temperature
	◆	CPU / system / power fan failure warning
Onboard SATA 3Gb/s RAID	◆	Onboard nVIDIA® CK804 chipset - supports data striping (RAID 0) or mirroring (RAID 1), striping + mirroring (RAID 0+1) or RAID 5 function - supports data transfer rate of up to 300 MB/s - supports hot plugging function - supports a maximum of 4 SATA 3Gb/s connections - supported on the Win 2000/XP operating systems
BIOS	◆	Use of licensed AWARD BIOS
	◆	Supports Dual BIOS/Q-Flash/Multilanguage BIOS
Additional Features	◆	Supports @BIOS
	◆	Supports EasyTune 5 (Note 1)
Overclocking	◆	Over Voltage via BIOS (FSB/DIMM/PCIE/CPU/North Bridge/South Bridge)
	◆	Over Clock via BIOS (CPU/DIMM/PCIE)
Form Factor	◆	ATX form factor; 30.5cm x 24.4cm

(Note 1) EasyTune 5 functions may vary depending on different motherboards.

1-3 Installation of the CPU and Heatsink

CAUTION

Before installing the CPU, please comply with the following conditions:

1. Please make sure that the motherboard supports the CPU.
2. Please take note of the one indented corner of the CPU. If you install the CPU in the wrong direction, the CPU will not insert properly. If this occurs, please change the insert direction of the CPU.
3. Please add an even layer of heat sink paste between the CPU and heatsink.
4. Please make sure the heatsink is installed on the CPU prior to system use, otherwise overheating and permanent damage of the CPU may occur.
5. Please set the CPU host frequency in accordance with the processor specifications. It is not recommended that the system bus frequency be set beyond hardware specifications since it does not meet the required standards for the peripherals. If you wish to set the frequency beyond the proper specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc.
6. Suggest CPU Fan speed must be over 3000rpm.

NOTE

HT functionality requirement content :

Enabling the functionality of Hyper-Threading Technology for your computer system requires all of the following platform components:

- CPU: An Intel® Pentium 4 Processor with HT Technology
- Chipset: A NVIDIA® Chipset that supports HT Technology
- BIOS: A BIOS that supports HT Technology and has it enabled
- OS: An operation system that has optimizations for HT Technology

1-3-1 Installation of the CPU

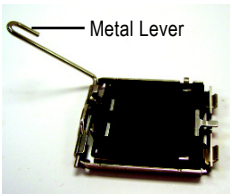


Fig. 1
Gently lift the metal lever located on the CPU socket to the upright position.

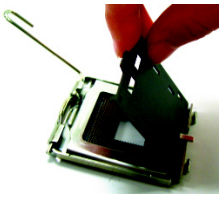


Fig. 2
Remove the plastic covering on the CPU socket.

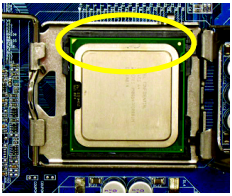


Fig. 3
Notice the small gold colored triangle located on the edge of the CPU socket. Align the indented corner of the CPU with the triangle and gently insert the CPU into position. (Grasping the CPU firmly between your thumb and forefinger, carefully place it into the socket in a straight and downwards motion. Avoid twisting or bending motions that might cause damage to the CPU during installation.)



Fig. 4
Once the CPU is properly inserted, please replace the load plate and push the metal lever back into its original position.

1-3-2 Installation of the Heatsink



Fig.1
Please apply an even layer of heatsink paste on the surface of the installed CPU.

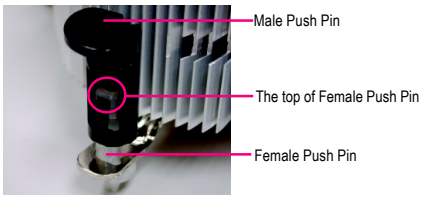


Fig. 2
(Turning the push pin along the direction of arrow is to remove the heatsink, on the contrary, is to install.) Please note the direction of arrow sign on the male push pin doesn't face inwards before installation. (This instruction is only for Intel boxed fan)

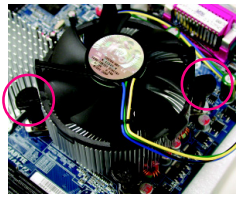


Fig. 3
Place the heatsink atop the CPU and make sure the push pins aim to the pin hole on the motherboard.Pressing down the push pins diagonally.

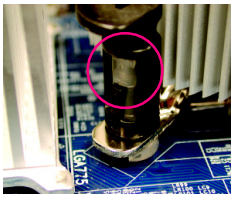


Fig. 4
Please make sure the Male and Female push pin are joined closely. (for detailed installation instructions, please refer to the heatsink installation section of the user manual)

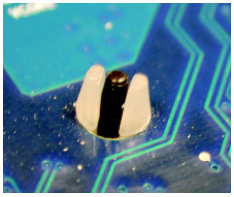


Fig. 5
Please check the back of motherboard after installing. If the push pin is inserted as the picture, the installation is complete.

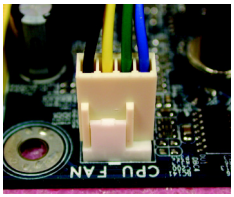


Fig. 6
Finally, please attach the power connector of the heatsink to the CPU fan header located on the motherboard.

NOTE
The heatsink may adhere to the CPU as a result of hardening of the heatsink paste.To prevent such an occurrence, it is suggested that either thermal tape rather than heat sink paste be used for heat dissipation or using extreme care when removing the heatsink.

1-4 Installing/Removing Cool-Plus (Northbridge Cooling Fan)

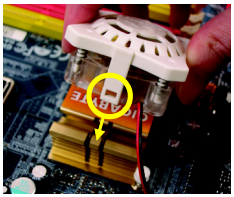


Fig.1
To attach Cool-Plus to a heatsink, align the extensions on both sides with the grooves in the heatsink as shown. Firmly press down until it snaps into position.

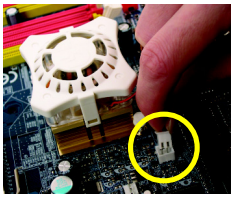


Fig.2
Once the fan is properly affixed onto the heatsink, plug the power cable into the NB_FAN connector.

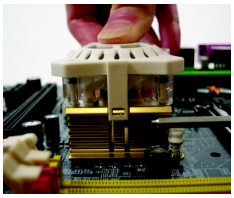


Fig.3
Before proceeding, first check to make sure that the fan's power cable is disconnected. Then, while applying pressure to the top of the fan, carefully use a screwdriver to dislodge the extension on one side.

CAUTION

Exerting too much pressure on the fan during removal might cause the side extensions to break-off.

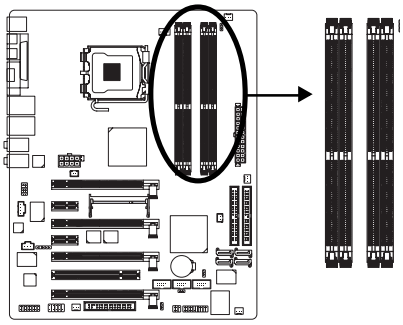
1-5 Installation of Memory

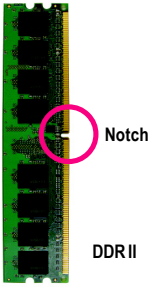
CAUTION

Before installing the memory modules, please comply with the following conditions:

1. Please make sure that the memory used is supported by the motherboard. It is recommended that memory of similar capacity, specifications and brand be used.
2. Before installing or removing memory modules, please make sure that the computer power is switched off to prevent hardware damage.
3. Memory modules have a foolproof insertion design. A memory module can be installed in only one direction. If you are unable to insert the module, please switch the direction.

The motherboard supports DDR II memory modules, whereby BIOS will automatically detect memory capacity and specifications. Memory modules are designed so that they can be inserted only in one direction. The memory capacity used can differ with each slot.





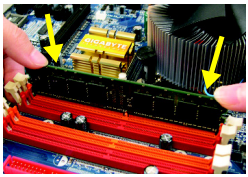


Fig.1
The DIMM socket has a notch, so the DIMM memory module can only fit in one direction. Insert the DIMM memory module vertically into the DIMM socket. Then push it down.

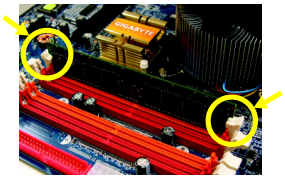


Fig.2
Close the plastic clip at both edges of the DIMM sockets to lock the DIMM module.
Reverse the installation steps when you wish to remove the DIMM module.

Dual Channel DDR II

GA-8N-SLI QUAD Royal supports the Dual Channel Technology. After operating the Dual Channel Technology, the bandwidth of Memory Bus will double.

If you want to operate the Dual Channel Technology, please note the following explanations due to the limitation of Intel chipset specifications.

1. Dual channel memory cannot be used if one or three DDR II memory modules are installed.
2. To enable Dual Channel mode with 2 or 4 memory modules, it is recommended to use memory modules of identical brand, size, chips, and speed.

We'll strongly recommend our user to slot two DDR II memory modules into the DIMMs of the same color in order for Dual Channel Technology to work.

The following table is for Dual Channel Technology combination: (DS: Double Side, SS: Single Side)

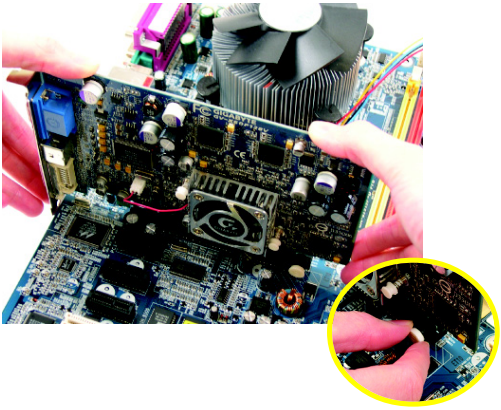
	DDR II 1	DDR II 2	DDR II 3	DDR II 4
2 memory modules	DS/SS	X	DS/SS	X
	X	DS/SS	X	DS/SS
4 memory modules	DS/SS	DS/SS	DS/SS	DS/SS

1-6 Installation of Expansion Cards

You can install your expansion card by following the steps outlined below:

1. Read the related expansion card's instruction document before install the expansion card into the computer.
2. Remove your computer's chassis cover, screws and slot bracket from the computer.
3. Press the expansion card firmly into expansion slot in motherboard.
4. Be sure the metal contacts on the card are indeed seated in the slot.
5. Replace the screw to secure the slot bracket of the expansion card.
6. Replace your computer's chassis cover.
7. Power on the computer, if necessary, setup BIOS utility of expansion card from BIOS.
8. Install related driver from the operating system.

Installing a PCI Express x 16 expansion card:



CAUTION

Please carefully pull out the small white-drawable bar at the end of the PCI Express x 16 slot when you try to install/uninstall the VGA card. Please align the VGA card to the onboard PCI Express x 16 slot and press firmly down on the slot. Make sure your VGA card is locked by the small white-drawable bar.

1-7 Setup of SLI (Scalable Link Interface) Configuration

The nVIDIA® nForce 4 SLI Intel Edition chipset offers blistering graphics performance with the ability to bridge two NVIDIA SLI-ready PCI Express™ graphics cards! The SLI design takes advantage of the increased bandwidth of the PCI Express™ bus architecture, features hardware and software innovations within NVIDIA GPU (graphics processing unit) and the nVIDIA nForce 4 SLI Intel Edition chipset. Together, the NVIDIA SLI technologies work seamlessly to allow two graphics cards to operate in parallel and share the work and deliver heart-pounding PC performance. This section introduces steps to configure an SLI system on the GA-8N-SLI QUAD Royal motherboard.

1-7-1 Before You Begin

I. Understanding the components:

☐ **The SLI bridge connector (GC-SLICON)**
The GC-SLICON is used to bridge two SLI-capable graphics cards in order to set up an SLI configuration.


GC-SLICON

☐ **The SLI switch module (GC-SLISW-C19)**
The GC-SLISW-C19 switch module is installed in the SLI switch module socket by factory default. This SLI switch module has gold edge connectors on two sides. One is SLI Mode and the other is Normal mode.



GC-SLISW-C19

☐ **The SLI switch module (GC-SLISW-3D1)**
For users who wish to install the GIGABYTE GV-3D1 graphics card on this motherboard, they must insert the GC-SLISW-3D1 switch module in the **3D1 Mode** direction.
(The Normal Mode is the same as that of the **GC-SLISW-C19** module.)



GC-SLISW-3D1

CAUTION

We do not recommend removing the SLI switch module (GC-SLISW-C19 or GC-SLISW-3D1) from the motherboard because in that case, both of the PCIE x 16 slots will not be available.

II. Power Requirements:
Before installation, assure that the power supply you use is able to provide sufficient power to fully support an SLI configuration and other components in your system. We recommend a power supply that provides at least 20A 5V and 12V current and a minimum of 500W wattage. Please note that the exact power requirements will depend on your overall system configurations.

III. Supported Operating Systems:
Only Windows XP operating system is currently supported by the NVIDIA SLI technology.

Note: As the SLI on GA-8N-SLI QUAD Royal supports various multiple video outputs combination, we suggest you follow the "Optimal Performance" or “Recommended” combinations provided in this guide.

Enabling SLI Mode--

Set the SLI switch module:

Note that as the switch module (GC-SLISW-C19) is preinstalled in the Normal Mode direction by factory default, the first step to enable SLI mode on your system is to take out the module from the socket, turn it around and insert it in the SLI Mode direction.

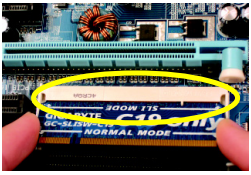
Step 1: Gently spread the retaining clips of the socket and the module may then be removed from the socket. Hold the module by the edges and lift it away from the socket.



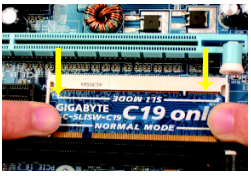
Step 2: Position the SLI Mode side of the module above the socket at a 25° angle. Align the small notch at the top edge of the module with the key in the socket.



Step 3: Insert the top edge of the module into the socket. Make sure the gold edge connectors are fully inserted.

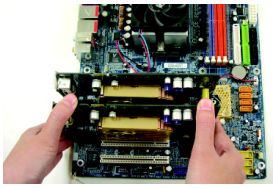


Step 4: Gently press down on the two ends of the module until it is locked in place by the socket clips. (You should hear a "click" when the module is attached.)

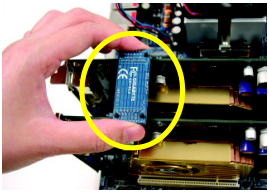


Connecting Two Graphics Cards:

Step 1: Observe the steps in "1-6 Installation of Expansion Cards" on page 16 and install two SLI-ready graphics cards of the same model to the PCIEX16_1(SLOT2) and PCIEX16_2(SLOT3) slots.



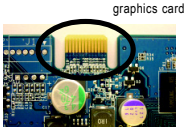
Step 2: Insert the SLI bridge (the GC-SLICON) to the SLI gold edge connector on top of both cards. Make sure the two mini female slots on the bridge connector securely fit onto the SLI gold edge connetors of both cards.



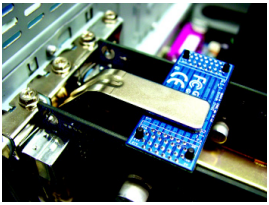
Female slots on the bridge connector

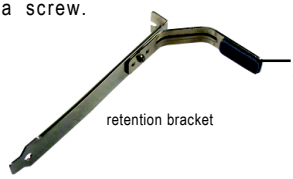


Gold edge connector on the top of graphics card



Step 3: In order to securely fix the bridge connector between the two cards, you must install the retention bracket included with the motherboard and secure the retention bracket to the chassis back panel with a screw.





place this part on the top of the bridge connector.

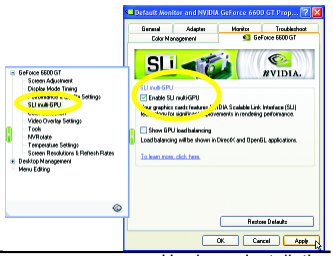
retention bracket

Graphics Card Driver Setting:

Step 1: After installing graphics card driver in operating system, right-click the NVIDIA icon in your system tray and then select **NVIDIA Display**. The NVIDIA control panel will appear.



Step 2: Select **SLI multi-GPU** from the side menu and then select the **Enable SLI multi-GPU** checkbox in the SLI multi-GPU dialog box. System will restart after you click **Apply**. Then the SLI configuration is completed.



1-7-2 Combination of SLI Applications

Please make sure the BIOS settings and graphics cards conforms to the following conditions, to enable the SLI function.

Condition 1: SLI function will use graphic cards of identical brand and chips.
(For example: GIGABYTE GV-NX66T128D).

Condition 2: Set PCIex16 Slot Lanes to "Auto" in BIOS setup.
(Please refer to page 55).

	North Bridge		South Bridge		NB SLI Switch Module	VGA Driver SLI Enabled	SLI Mode	Video Outputs(Note1)	Remark
	PCIEX8_1 (SLOT1)	PCIEX16_1 (SLOT2)	PCIEX16_2 (SLOT3)	PCIEX8_2 (SLOT4)					
Combination 1		nVidia (x16)	nVidia (x16)		GC-SLISW-C19 (Normal Mode)	YES	x16-x16 (NB+SB)	2	Optimal Performance
Combination 2	nVidia (x8)	nVidia (x8)			GC-SLISW-C19 (SLI Mode)	YES	x8-x8 (NB)	2	
Combination 3			nVidia (x8)	nVidia (x8)	Don't Care	YES	x8-x8 (SB)	2	

Note 1. Video output quantity is based on to graphic card.

CAUTION Due to nVidia driver's limition, the SLI function is not used when more than 2 pieces nVidia graphic cards are installed.

1-7-3 Graphic Cards Support List

(The items below are all supported under the Windows XP operating system.)

NOTE Graphic cards support listed below are for reference only.
Due to massive graphic cards on the market, we can only verify some of them.
Graphic cards not listed below does not mean they are not supported by this M/B.
For more detail support lists please click onto Gigabyte's website at
http://www.gigabyte.com.tw

Figure 1-1. Combination 1 (2 slots on Sourth Bridge + North Bridge)

Graphics Chip	Maker	Model Name	GPU
Nvidia	Gigabyte	* GV-NX66T128D	Geforce 6600GT (NV43GT)
	Gigabyte	* GV-NX68T256DH	Geforce 6800GT (NV45GT)
	Gigabyte	* GV-NX68U256D	Geforce 6800 Ultra (NV45 Ultra)
	Gigabyte	GV-3D1	Geforce 6600GT x 2
	Gigabyte	* GV-NX68256D	Geforce 6800
	Gigabyte	GV-NX78X256V-B	Geforce 7800GTX
	Gigabyte	* GV-NX78T256V-B	Geforce 7800GT

Note: Models above marked with "*" may experience problems display issues when resuming from S1 standby due to nVidia driver limitations.

Figure 1-2. Combination 2 (2 slots on North Bridge)

Graphics Chip	Maker	Model Name	GPU
Nvidia	Gigabyte	GV-NX66T128D	Geforce 6600GT (NV43GT)
	Gigabyte	GV-NX68T256DH	Geforce 6800GT (NV45GT)
	Gigabyte	GV-NX68U256D	Geforce 6800 Ultra (NV45 Ultra)
	Gigabyte	GV-3D1	Geforce 6600GT x 2
	Gigabyte	GV-NX68256D	Geforce 6800
	Gigabyte	GV-NX78X256V-B	Geforce 7800GTX
	Gigabyte	GV-NX78T256V-B	Geforce 7800GT

Figure 1-3. Combination 3 (2 slots on Sourth Bridge)

Graphics Chip	Maker	Model Name	GPU
Nvidia	Gigabyte	GV-NX66T128D	Geforce 6600GT (NV43GT)
	Gigabyte	GV-NX68T256DH	Geforce 6800GT (NV45GT)
	Gigabyte	GV-NX68U256D	Geforce 6800 Ultra (NV45 Ultra)
	Gigabyte	GV-3D1	Geforce 6600GT x 2
	Gigabyte	GV-NX68256D	Geforce 6800
	Gigabyte	GV-3D1-68GT	Geforce 6800GT x 2
	Gigabyte	GV-NX78T256V-B	Geforce 7800GT

1-8 Configuring a Multi View System

This function is supported only on Windows XP operating system.

With Multi View technology from GIGABYTE, Quad Graphic enabled motherboards offer multiple display support on up to eight separate monitors. This improves the capabilities and productivity of the user by allowing them to spread multiple windows over eight monitors and view them simultaneously.



Multiple display support for increasing productivity



Multiple display support for immersive video / gaming experience

Before you begin--

I. Power requirement:
The exact power requirement will depend on your overall system configurations. You need a power supply that can provide sufficient and stable power to your system and the two graphics cards. We recommend a power supply that supplies 500W (or above) and 25A (or above) +12V current.

II. NVIDIA video driver of version later than 7.7.7.2 should be used.

1-8-1 Combination of Multi View Applications

The Multi View function must establish in the BIOS setup item comfirms to the condition.

Condition 1: It will set PCIex16 Slot Lanes to “Auto” in BIOS setup item .
(Please refer to page 55).

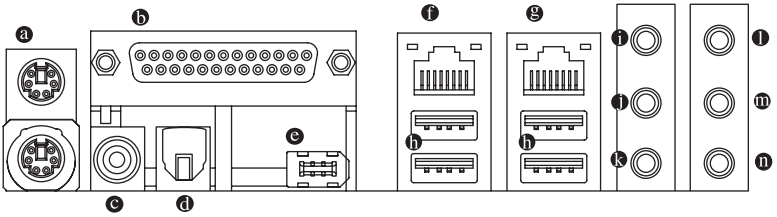
North Bridge		South Bridge		NB SLI Switch Module	VGA Driver SLI Enabled	SLI Mode	Video Outputs(Note1)	Remark
PCIEX8_1 (SLOT1)	PCIEX16_1 (SLOT2)	PCIEX16_2 (SLOT3)	PCIEX8_2 (SLOT4)					
nVidia/ATI(x8)	nVidia/ATI (x8)	nVidia/ATI (x8)	nVidia/ATI (x8)	GC-SLISW-C19 (SLI Mode)	NO	N/A	8	Recommended

1-8-2 Graphic Cards Support List

Figure 1-1. 4 slots on Sourth Bridge + North Bridge

Graphics Chip	Maker	Model Name	GPU
Nvidia	Gigabyte	GV-NX78X256V-B x2	Geforce 7800GTX
ATI	Gigabyte	GV-RX60P128DE x2	Radeon X600Pro

1-9 I/O Back Panel Introduction



a PS/2 Keyboard and PS/2 Mouse Connector

To install a PS/2 port keyboard and mouse, plug the mouse to the upper port (green) and the keyboard to the lower port (purple).

b Parallel Port

The parallel port allows connection of a printer, scanner and other peripheral devices.

c COAXIAL (SPDIF_RCA)

The SPDIF coaxial output port is capable of providing digital audio to external speakers or compressed AC3 data to an external Dolby Digital Decoder via a coaxial cable.

d OPTICAL (SPDIF_O)

The SPDIF optical output port is capable of providing digital audio to external speakers or com pressed AC3 data to an external Dolby Digital Decoder via an optical cable.

e IEEE1394 Port

Connects the IEEE1394 devices to this connector.

f LAN Port 2

The provided Internet connection is Gigabit Ethernet, providing data transfer speeds of 10/100/1000Mbps.

g LAN Port 1

The provided Internet connection is Gigabit Ethernet (PCI Express Gigabit), providing data transfer speeds of 10/100/1000Mbps.

h USB port

Before you connect your device(s) into USB connector(s), please make sure your device(s) such as USB keyboard, mouse, scanner, zip, speaker...etc. have a standard USB interface. Also make sureyour OS supports USB controller. If your OS does not support USB controller, please contact OS vendor for possible patch or driver upgrade. For more information please contact your OS or device(s) vendors.

i Line In

Devices like CD-ROM, walkman etc. can be connected to Line In jack.

l Line Out (Front Speaker Out)

Connect the stereo speakers, earphone or front surround speakers to this connector.

k MIC In

Microphone can be connected to MIC In jack.

l Rear Speaker Out

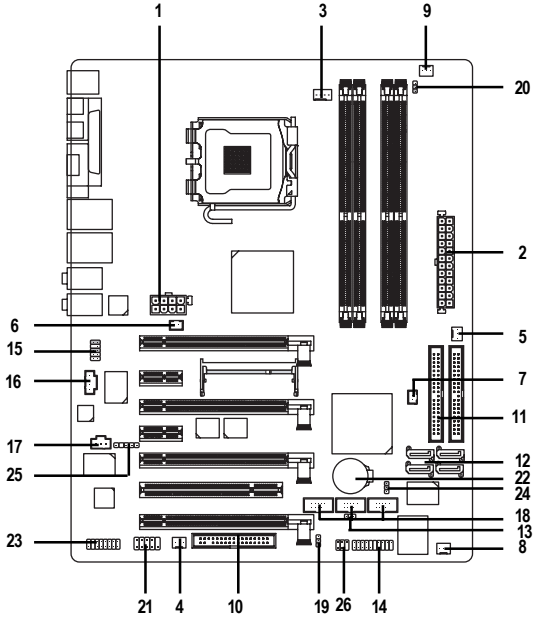
Connect the rear surround speakers to this connector.

⓫ **Center/Subwoofer Speaker Out**
Connect the Center/Subwoofer speakers to this connector.

⓬ **Side Speaker Out**
Connect the side surround speakers to this connector.

NOTE You can use audio software to configure 2-/4-/6-/8-channel audio functioning.

1-10 Connectors Introduction



1) ATX_12V	14) F_PANEL
2) ATX (Power Connector)	15) F_AUDIO
3) CPU_FAN	16) CD_IN
4) SYS_FAN	17) SPDIF_IN
5) PWR_FAN	18) F_USB1 / F_USB2/F_USB3
6) NB_FAN	19) FUSB_PSEL
7) SB_FAN	20) RUSB_PSEL
8) AUX_FAN	21) COMA
9) MAN_FAN	22) BATTERY
10) FDD	23) 1394_CON
11) IDE1 / IDE2	24) CLR_CMOS
12) SATA0/1/2/3	25) IR
13) PWR_LED	26) RF_ID

1/2) ATX_12V/ATX (Power Connector)

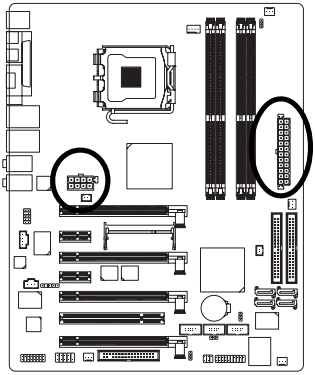
With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, please make sure that all components and devices are properly installed. Align the power connector with its proper location on the motherboard and connect tightly.

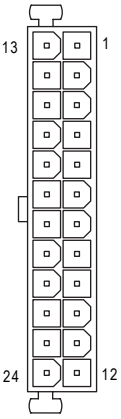
The ATX_12V power connector mainly supplies power to the CPU. If the ATX_12V power connector is not connected, the system will not start.

Caution!

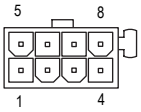
Please use a power supply that is able to handle the system voltage requirements. It is recommended that a power supply that can withstand high power consumption be used (350W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable system or a system that is unable to start.

If you use a 24-pin ATX power supply, please remove the small cover on the power connector on the motherboard before plugging in the power cord ; otherwise, please do not remove it.





Pin No.	Definition
1	3.3V
2	3.3V
3	GND
4	+5V
5	GND
6	+5V
7	GND
8	Power Good
9	5V SB(stand by +5V)
10	+12V
11	+12V
12	3.3V (Only for 24pins ATX)
13	3.3V
14	-12V
15	GND
16	PS_ON(soft On/Off)
17	GND
18	GND
19	GND
20	-5V
21	+5V
22	+5V
23	+5V
24	GND



Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V

3/4/5) CPU_FAN / SYS_FAN/ PWR_FAN (Cooler Fan Power Connector)

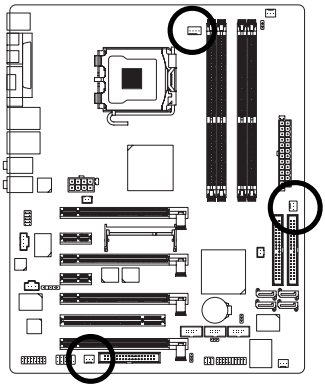
The cooler fan power connector supplies a +12V power voltage via a 3-pin/4-pin (only for CPU_FAN)power connector and possesses a foolproof connection design.

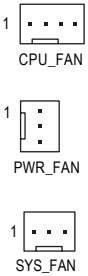
Most coolers are designed with color-coded power connector wires. A red power connector wire indicates a positive connection and requires a +12V power voltage. The black connector wire is the ground wire (GND).

Please remember to connect the power to the cooler to prevent system overheating and failure.

Caution!

Please remember to connect the power to the CPU fan to prevent CPU overheating and failure.

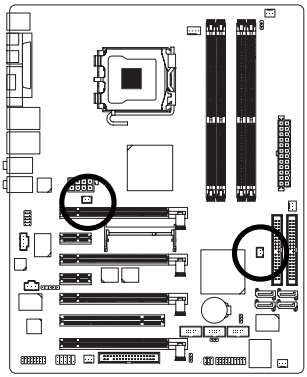


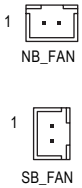


Pin No.	Definition
1	GND
2	+12V
3	Sense
4	Speed Control (Only for CPU_FAN)

6/7) NB_FAN / SB_FAN (Chip Fan Power Connector)

If you installed wrong direction, the chip fan will not work. Sometimes will damage the chip fan. (Usually black cable is GND)

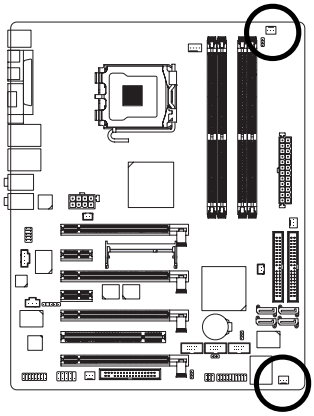


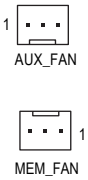


Pin No.	Definition
1	+12V
2	GND

8/9) AUX_FAN / MEN_FAN (Chip Fan Power Connector)

If you installed wrong direction, the chip fan will not work. Sometimes will damage the chip fan. (Usually black cable is GND)

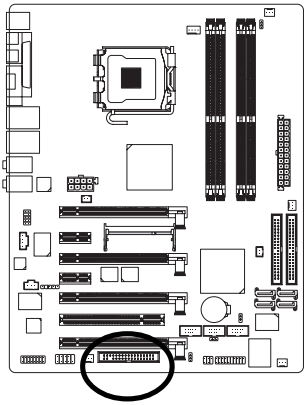


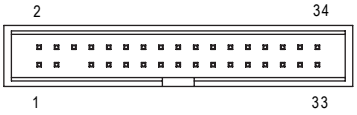


Pin No.	Definition
1	GND
2	+12V
3	Sense

10) FDD (Floppy Connector)

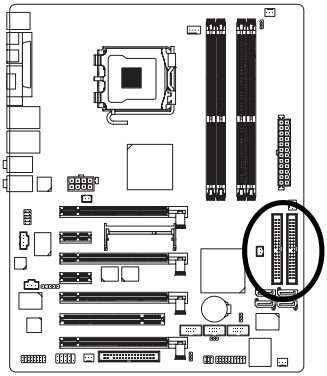
The FDD connector is used to connect the FDD cable while the other end of the cable connects to the FDD drive. The types of FDD drives supported are: 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB. Please connect the red power connector wire to the pin1 position.

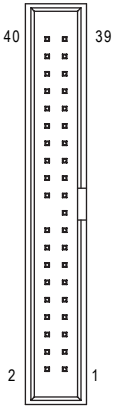




11) IDE1/IDE2 (IDE Connector)

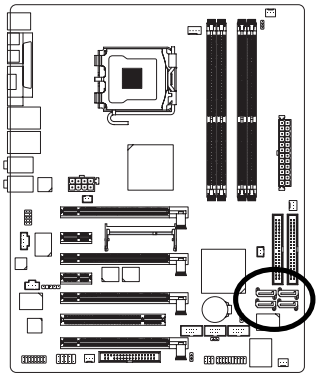
An IDE device connects to the computer via an IDE connector. One IDE connector can connect to one IDE cable, and the single IDE cable can then connect to two IDE devices (hard drive or optical drive). If you wish to connect two IDE devices, please set the jumper on one IDE device as Master and the other as Slave (for information on settings, please refer to the instructions located on the IDE device).

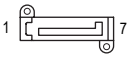




12) SATA0/1/2/3 (SATA 3Gb/s Connectors, Controlled by CK804)

SATA 3Gb/s can provide up to 300MB/s transfer rate. Please refer to the BIOS setting for the SATA 3Gb/s and install the proper driver in order to work properly.

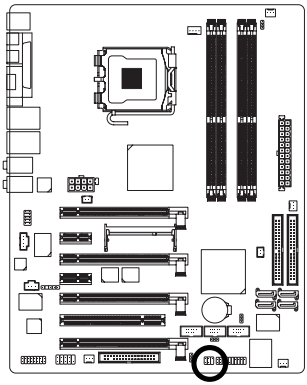




Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

13) PWR_LED

PWR_LED is connected with the system power indicator to indicate whether the system is on/off. It will blink when the system enters suspend mode.

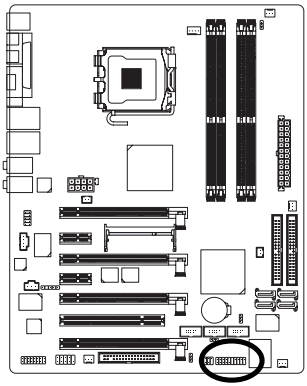


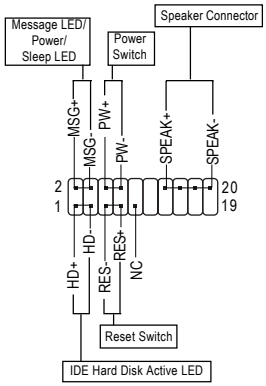
1

Pin No.	Definition
1	MPD+
2	MPD-
3	MPD-

14) F_PANEL (Front Panel Jumper)

Please connect the power LED, PC speaker, reset switch and power switch etc of your chassis front panel to the F_PANEL connector according to the pin assignment below.

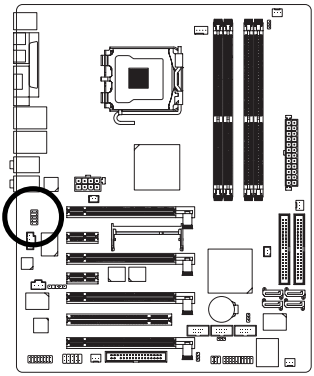




HD (IDE Hard Disk Active LED) (Blue)	Pin 1: LED anode(+) Pin 2: LED cathode(-)
SPEAK (Speaker Connector) (Amber)	Pin 1: Power Pin 2- Pin 3: NC Pin 4: Data(-)
RES (Reset Switch) (Green)	Open: Normal Close: Reset Hardware System
PW (Power Switch) (Red)	Open: Normal Close: Power On/Off
MSG(Message LED/Power/Sleep LED) (Yellow)	Pin 1: LED anode(+) Pin 2: LED cathode(-)
NC (Purple)	NC

15) F_AUDIO (Front Audio Connector)

If you want to use Front Audio connector, you must remove 5-6, 9-10 Jumper. In order to utilize the front audio header, your chassis must have front audio connector. Also please make sure the pin assigments on the cable are the same as the pin assigments on the MB header. To find out if the chassis you are buying support front audio connector, please contact your dealer.Please note, you can have the alternative of using front audio connector or of using rear audio connector to play sound.

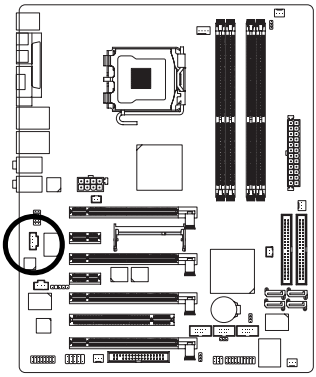




Pin No.	Definition
1	MIC
2	GND
3	MIC_BIAS
4	POWER
5	FrontAudio(R)
6	Rear Audio (R)/ Return R
7	NC
8	No Pin
9	FrontAudio (L)
10	Rear Audio (L)/ Return L

16) CD_IN (CD IN)

Connect CD-ROM or DVD-ROM audio out to the connector.



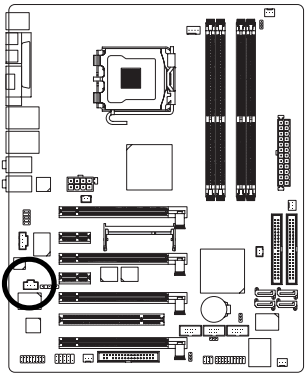


Pin No.	Definition
1	CD-L
2	GND
3	GND
4	CD-R

17) SPDIF_IN (SPDIF In)

Use SPDIF IN feature only when your device has digital output function.

Be careful with the polarity of the SPDIF_IN connector. Check the pin assignment carefully while you connect the SPDIF cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional SPDIF cable, please contact your local dealer.

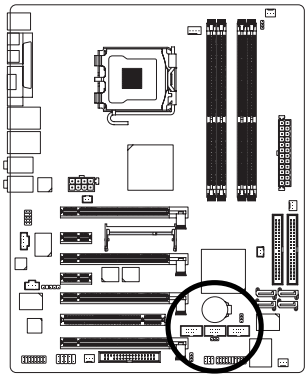


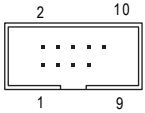


Pin No.	Definition
1	Power
2	SPDIFI
3	GND

18) F_ USB1 / F_USB2 / F_USB3 (Front USB Connector)

Be careful with the polarity of the front USB connector. Check the pin assignment carefully while you connect the front USB cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional front USB cable, please contact your local dealer.

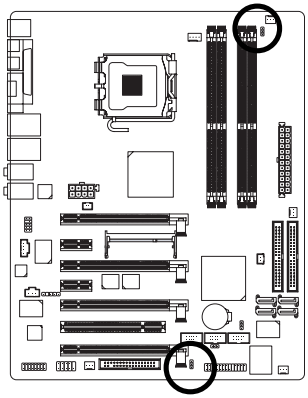




Pin No.	Definition
1	Power(5V)
2	Power(5V)
3	USB DX-
4	USB Dy-
5	USB DX+
6	USB Dy+
7	GND
8	GND
9	No Pin
10	NC

19/20) RUSB_PSEL / FUSB_PSEL

These 2 jumpers are used to select the power of the rear & front USB devices.
Normal 5V (jumper set to 1-2) and standby 5V (jumper set to 2-3) are available. When standby 5V is selected, users can wake up system from USB devices.

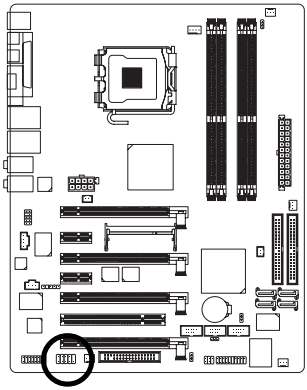




Pin No.	Definition
1-2 Short	Normal 5V
2-3 Short	Standby 5V

21) COMA (Serial Port Connector)

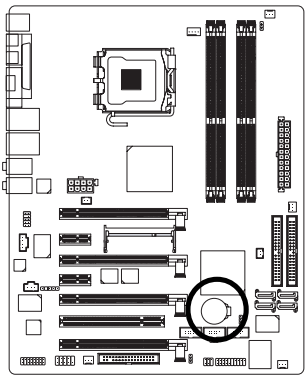
Be careful with the polarity of the COMA connector. Check the pin assignment carefully while you connect the COMA cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional COMA cable, please contact your local dealer.

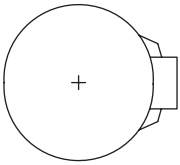




Pin No.	Definition
1	NDCDA-
2	NSINA
3	NSOUTA
4	NDTRA-
5	GND
6	NDSRA-
7	NRTSA-
8	NCTSA-
9	NRIA-
10	No Pin

22) BAT(Battery)





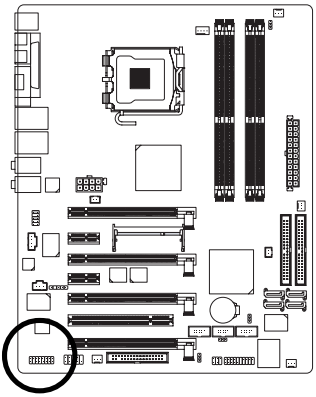
- ❖ Danger of explosion if battery is incorrectly replaced.
- ❖ Replace only with the same or equivalent type recommended by the manufacturer.
- ❖ Dispose of used batteries according to the manufacturer's instructions.

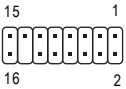
If you want to erase CMOS...

1. Turn OFF the computer and unplug the power cord.
2. Take out the battery gently and put it aside for about 10 minutes. (Or you can use a metal object to connect the positive and negative pins in the battery holder to makethem short for one minute.)
3. Re-install the battery.
4. Plug the power cord and turn ON the computer.

23) 1394_CON (IEEE 1394 Connectors)

Serial interface standard set by Institute of Electrical and Electronics Engineers, which has features like high speed, high bandwidth and hot plug. Be careful with the polarity of the IEEE1394 connector. Check the pin assignment carefully while you connect the IEEE1394 cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional IEEE1394 cable, please contact your local dealer.

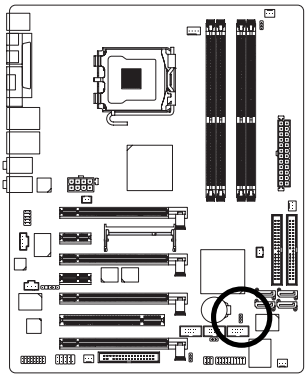




Pin No.	Definition
1	Power (12V)
2	Power (12V)
3	TPA1+
4	TPA1-
5	GND
6	GND
7	TPB1+
8	TPB1-
9	Power (12V)
10	Power (12V)
11	TPA2+
12	TPA2-
13	GND
14	No Pin
15	TPB2+
16	TPB2-

24) CLR_CMOS (Clear CMOS)

You may clear the CMOS data to its default values by this header. To clear CMOS, temporarily short 1-2 pin. Default doesn't include the jumper to prevent from improper use of this header.





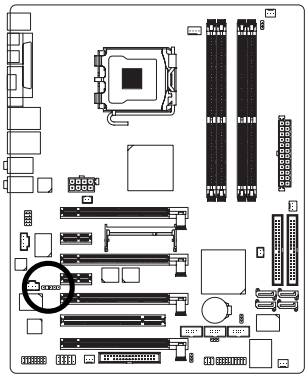
1-2 Short : Clear CMOS



2-3 Short : Normal (Default value)

25) IR

Be careful with the polarity of the IR connector while you connect the IR. Please contact your nearest dealer for optional IR device.

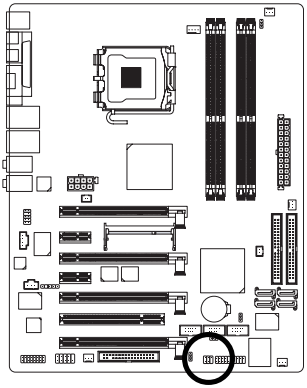




Pin No.	Definition
1	VCC
2	No Pin
3	IR RX
4	GND
5	IR TX

26) RF_ID

This connector allows you to connect external devices to use extra function. Check the pin assignments before you connect the external device cable. Please contact your nearest dealer for the optional GIGABYTE external device.





Pin No.	Definition
1	Power
2	RFID_RI-
3	RF_TXD
4	RF_RXD
5	NC
6	GND

Chapter 2 BIOS Setup

BIOS (Basic Input and Output System) includes a CMOS SETUP utility which allows user to configure required settings or to activate certain system features.
The CMOS SETUP saves the configuration in the CMOS SRAM of the motherboard.
When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS SRAM.
When the power is turned on, pushing the <Del> button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen. You can enter the BIOS setup screen by pressing "Ctrl + F1".
When setting up BIOS for the first time, it is recommended that you save the current BIOS to a disk in the event that BIOS needs to be reset to its original settings. If you wish to upgrade to a new BIOS, either Gigabyte's Q-Flash or @BIOS utility can be used.
Q-Flash allows the user to quickly and easily update or backup BIOS without entering the operating system.
@BIOS is a Windows-based utility that does not require users to boot to DOS before upgrading BIOS but directly download and update BIOS from the Internet.

CONTROL KEYS

< ↑ > < ↓ > < ← > < → >	Move to select item
<Enter>	Select Item
<Esc>	Main Menu - Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu
<Page Up>	Increase the numeric value or make changes
<Page Down>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F2>	Item Help
<F3>	Select Language
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the fail-safe default CMOS value from BIOS default table
<F7>	Load the Optimized Defaults
<F8>	Dual BIOS/Q-Flash utility
<F9>	System Information
<F10>	Save all the CMOS changes, only for Main Menu

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu / Option Page Setup Menu

Press <F1> to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.

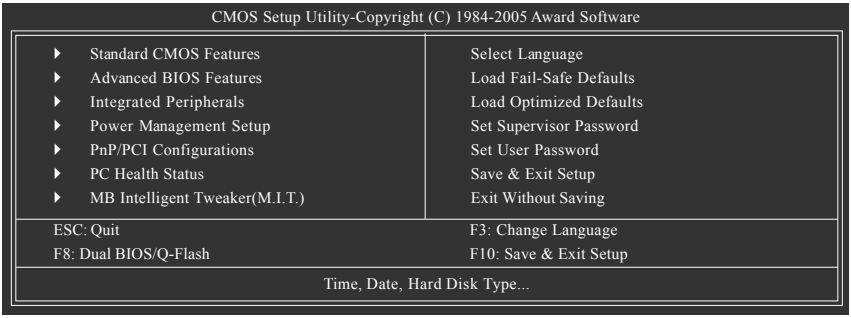


Because BIOS flashing is potentially risky, please do it with caution and avoid inadequate operation that may result in system malfunction.

The BIOS Setup menus described in this chapter are for reference only and may differ from the exact settings for your motherboard.

The Main Menu (For example: BIOS Ver. : F1)

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (as figure below) will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



If you can't find the setting you want, please press "Ctrl+F1" to search the advanced option hidden.Please Load Optimized Defaults in the BIOS when somehow the system works not stable as usual. This action makes the system reset to the default for stability.

- **Standard CMOS Features**
  This setup page includes all the items in standard compatible BIOS.
- **Advanced BIOS Features**
  This setup page includes all the items of Award special enhanced features.
- **Integrated Peripherals**
  This setup page includes all onboard peripherals.
- **Power Management Setup**
  This setup page includes all the items of Green function features.
- **PnP/PCI Configuration**
  This setup page includes all the configurations of PCI & PnP ISA resources.
- **PC Health Status**
  This setup page is the System auto detect Temperature, voltage, fan, speed.
- **MB Intelligent Tweaker(M.I.T.)**
  This setup page is control CPU clock and frequency ratio.
- **Select Language**
  This setup page is to select multi languages.

- **Load Fail-Safe Defaults**

  Fail-Safe Defaults indicates the value of the system parameters which the system would be in safe configuration.

- **Load Optimized Defaults**

  Optimized Defaults indicates the value of the system parameters which the system would be in best performance configuration.

- **Set Supervisor Password**

  Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

- **Set User Password**

  Change, set, or disable password. It allows you to limit access to the system.

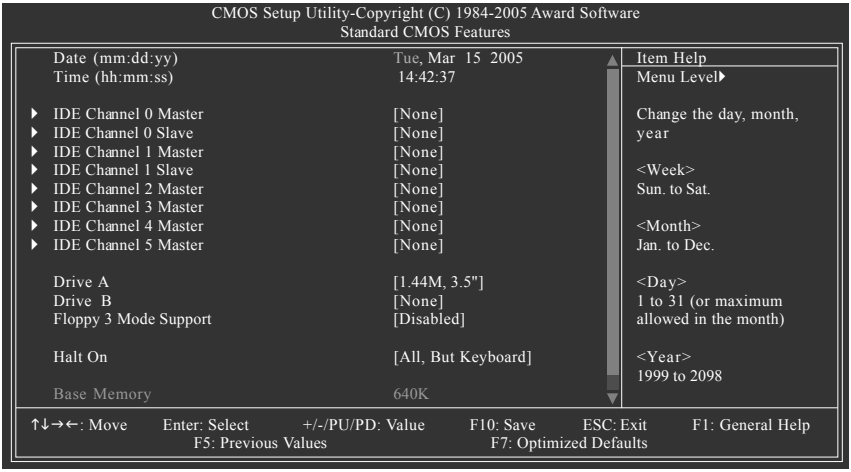
- **Save & Exit Setup**

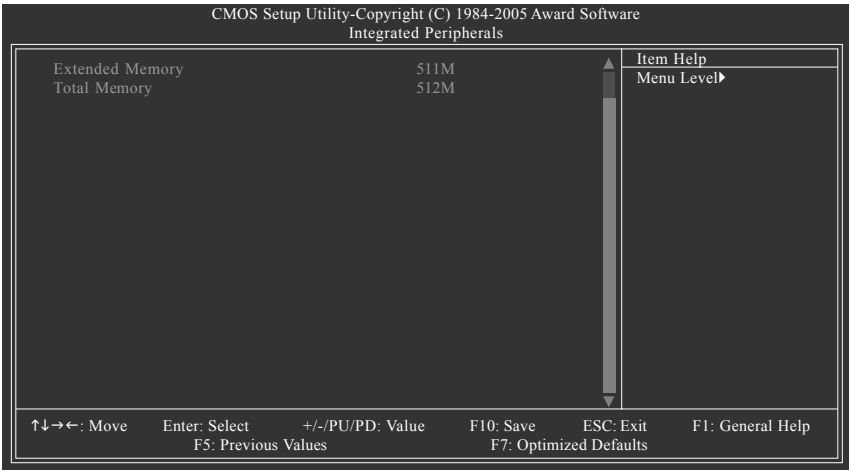
  Save CMOS value settings to CMOS and exit setup.

- **Exit Without Saving**

  Abandon all CMOS value changes and exit setup.

2-1 Standard CMOS Features





☞ **Date**

The date format is <week>, <month>, <day>, <year>.

- ⏩ Week — The week, from Sun to Sat, determined by the BIOS and is display only
- ⏩ Month — The month, Jan. Through Dec.
- ⏩ Day — The day, from 1 to 31 (or the maximum allowed in the month)
- ⏩ Year — The year, from 1999 through 2098

☞ **Time**

The times format in <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

☞ **IDE Channel 0 Master, Slave, IDE Channel 1 Master, Slave**

- IDE HDD Auto-Detection Press "Enter" to select this option for automatic device detection.
- IDE Device Setup. You can use one of three methods:
  - Auto — Allows BIOS to automatically detect IDE devices during POST(default)
  - None — Select this if no IDE devices are used and the system will skip the automatic detection step and allow for faster system start up.
  - Manual — User can manually input the correct settings
- Access Mode — Use this to set the access mode for the hard drive. The four options are: CHS/LBA/Large/Auto(default:Auto)

☞ **IDE Channel 2/3/4/5 Master**

- IDE HDD Auto-Detection Press "Enter" to select this option for automatic device detection.
- Extended IDE Drive SATA devices setup. You can use one of two methods:
  - Auto — Allows BIOS to automatically detect SATA IDE devices during POST. (Default value)
  - None — Select this if no SATA IDE devices are used and the system will skip the automatic detection step and allow for faster system start up.
- Access Mode — Use this to set the access mode for the hard drive. The two options are: Large/Auto(default:Auto)
- Capacity — Capacity of currently installed hard disk.

Hard drive information should be labeled on the outside drive casing. Enter the appropriate option based on this information.

- Cylinder — Number of cylinders
- Head — Number of heads
- Precomp — Write precomp
- Landing Zone — Landing zone
- Sector — Number of sectors

☞ **Drive A / Drive B**

The category identifies the types of floppy disk drive A or drive B that has been installed in the computer.

- None — No floppy drive installed.
- 360K, 5.25" — 5.25 inch PC-type standard drive; 360K byte capacity.
- 1.2M, 5.25" — 5.25 inch AT-type high-density drive; 1.2M byte capacity. (3.5 inch when 3 Mode is Enabled).
- 720K, 3.5" — 3.5 inch double-sided drive; 720K byte capacity .
- 1.44M, 3.5" — 3.5 inch double-sided drive; 1.44M byte capacity.
- 2.88M, 3.5" — 3.5 inch double-sided drive; 2.88M byte capacity.

☞ **Floppy 3 Mode Support (for Japan Area)**

- Disabled — Normal Floppy Drive. (Default value)
- Drive A — Drive A is 3 mode Floppy Drive.
- Drive B — Drive B is 3 mode Floppy Drive.
- Both — Drive A & B are 3 mode Floppy Drives.

☞ **Halt on**

The category determines whether the computer will stop if an error is detected during power up.

⏩ No Errors	The system boot will not stop for any error that may be detected and you ill be prompted.
⏩ All Errors	Whenever the BIOS detects a non-fatal error the system will be stopped.
⏩ All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors. (Default value)
⏩ All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
⏩ All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

☞ **Memory**

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

⏩ **Base Memory**

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

⏩ **Extended Memory**

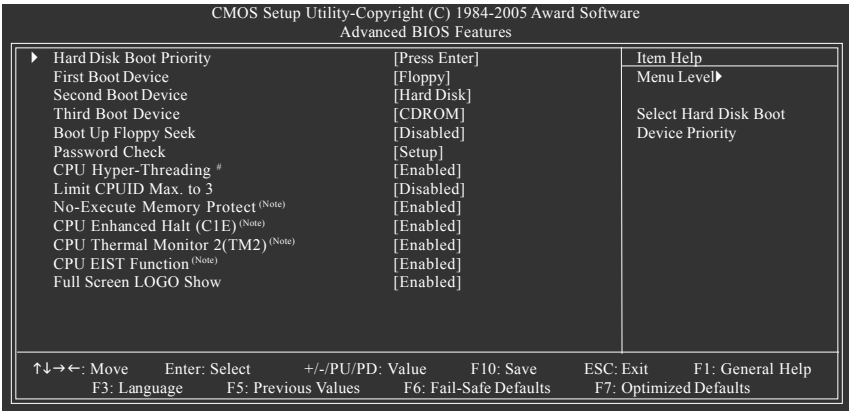
The BIOS determines how much extended memory is present during the POST.

This is the amount of memory located above 1 MB in the CPU's memory address map.

⏩ **Total Memory**

This item displays the memory size that used.

2-2 Advanced BIOS Features



"#" : This option is available only when the processor you install supports Intel® Hyper-Threading Technology.

☞ **Hard Disk Boot Priority**

Select boot sequence for onboard(or add-on cards) SCSI, RAID, etc.

Use <↑> or <↓> to select a device, then press<+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.

☞ **First / Second / Third Boot Device**

- ⏩ Floppy — Select your boot device priority by Floppy.
- ⏩ LS120 — Select your boot device priority by LS120.
- ⏩ Hard Disk — Select your boot device priority by Hard Disk.
- ⏩ CDROM — Select your boot device priority by CDROM.
- ⏩ ZIP — Select your boot device priority by ZIP.
- ⏩ USB-FDD — Select your boot device priority by USB-FDD.
- ⏩ USB-ZIP — Select your boot device priority by USB-ZIP.
- ⏩ USB-CDROM — Select your boot device priority by USB-CDROM.
- ⏩ USB-HDD — Select your boot device priority by USB-HDD.
- ⏩ Legacy LAN — Select your boot device priority by LAN.
- ⏩ Disabled — Disable this function.

☞ **Boot Up Floppy Seek**

During POST, BIOS will determine the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks 720K, 1.2M and 1.44M are all 80 tracks.

- ⏩ Enabled — BIOS searches for floppy disk drive to determine it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
- ⏩ Disabled — BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K. (Default value)

(Note) This item will show up when you install a processor that supports this function.

☞ **Password Check**

- ⏩ System — The system can not boot and can not access to Setup page will be denied if the correct password is not entered at the prompt.
- ⏩ Setup — The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt. (Default value)

☞ **CPU Hyper-Threading**

This option appears only when the processor you install supports Intel® Hyper-Threading Technology.

- ⏩ Enabled — Enable CPU Hyper-Threading feature. Please note that this feature only works for operating system with multiprocessors mode supported. (Default value)
- ⏩ Disabled — Disable CPU Hyper-Threading.

☞ **Limit CPUID Max. to 3**

- ⏩ Enabled — Limit CPUID Maximum value to 3 when using older OS like NT4.
- ⏩ Disabled — Disable CPUID Limit for Windows XP.(Default value)

☞ **No-Execute Memory Protect** (Note)

- ⏩ Enabled — Enable No-Execute Memory Protect function.(Default value)
- ⏩ Disabled — Disable No-Execute Memory Protect function.

☞ **CPU Enhanced Halt (C1E)** (Note)

- ⏩ Enabled — Enable CPU Enhanced Halt (C1E) function.(Default value)
- ⏩ Disabled — Disable CPU Enhanced Halt (C1E) function.

☞ **CPU Thermal Monitor 2 (TM2)** (Note)

- ⏩ Enabled — Enable CPU Thermal Monitor 2 (TM2) function.(Default value)
- ⏩ Disabled — Disable CPU Thermal Monitor 2 (TM2) function.

☞ **CPU EIST Function** (Note)

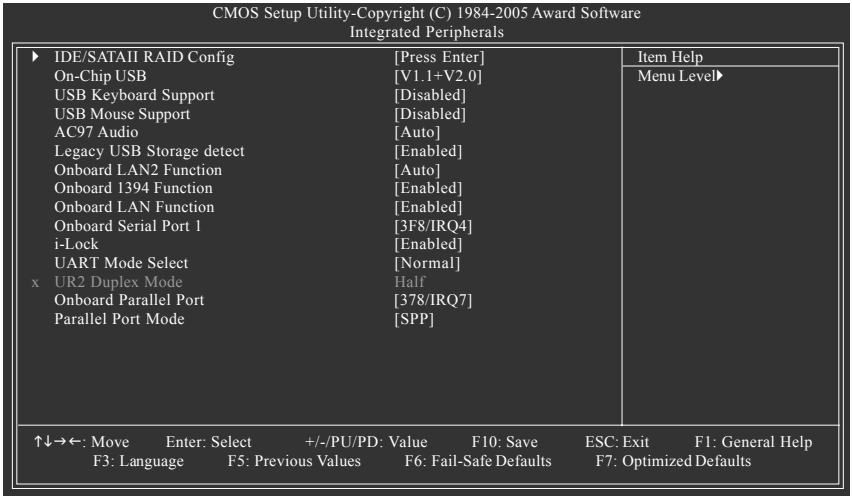
- ⏩ Enabled — Enable CPU EIST function.(Default value)
- ⏩ Disabled — Disable CPU EIST function.

☞ **Full Screen LOGO Show**

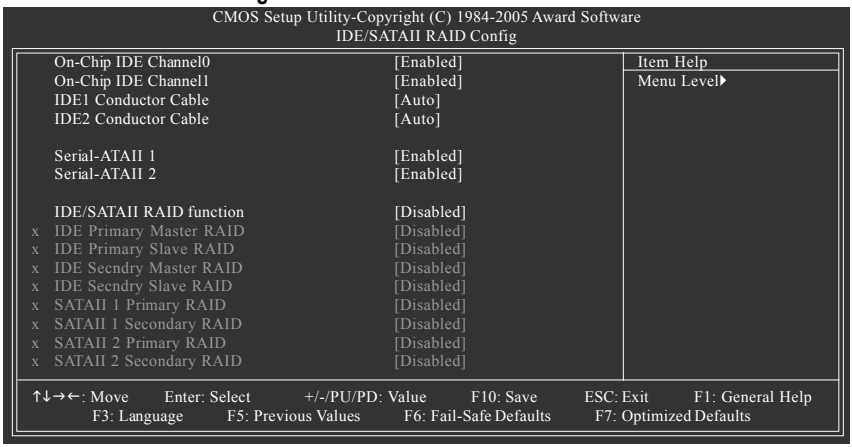
- ⏩ Enabled — Display Full Screen Logo during POST. (Defaults value)
- ⏩ Disabled — Do not display Full Screen Logo.

(Note) This item will show up when you install a processor that supports this function.

2-3 Integrated Peripherals



☞ IDE/SATAII RAID Config



☞ On-Chip IDE Channel0

- ⏩ Enabled Enable onboard 1st channel IDE port. (Default value)
- ⏩ Disabled Disable onboard 1st channel IDE port.

☞ On-Chip IDE Channel1

- ⏩ Enabled Enable onboard 2nd channel IDE port. (Default value)
- ⏩ Disabled Disable onboard 2nd channel IDE port.

☞ **IDE1 Conductor Cable**
- ⏩ Auto — BIOS autodetects IDE1 conductor cable .(Default Value)
- ⏩ ATA66/100/133 — Set IDE1 Conductor Cable to ATA66/100/133 (Please make sure your IDE device and cable are compatible with ATA66/100/133).
- ⏩ ATA33 — Set IDE1 Conductor Cable to ATA33. (Please make sure your IDE device and cable are compatible with ATA33)

☞ **IDE2 Conductor Cable**
- ⏩ Auto — BIOS autodetects IDE2 conductor cable. (Default Value)
- ⏩ ATA66/100/133 — Set IDE2 Conductor Cable to ATA66/100/133. (Please make sure your IDE device and cable are compatible with ATA66/100/133)
- ⏩ ATA33 — Set IDE2 Conductor Cable to ATA33. (Please make sure your IDE device and cable are compatible with ATA33)

☞ **Serial-ATAII 1 (Onboard nVIDIA chipset)**
- ⏩ Enabled — Enable Serial-ATAII 1 support. (Default Value)
- ⏩ Disabled — Disable Serial-ATAII 1 support.

☞ **Serial-ATAII 2 (Onboard nVIDIA chipset)**
- ⏩ Enabled — Enable Serial-ATAII 2 support. (Default Value)
- ⏩ Disabled — Disable Serial-ATAII 2 support.

☞ **IDE/SATAII RAID function**
- ⏩ Enabled — Enable IDE/SATAII function.
- ⏩ Disabled — Disable IDE/SATAII function.(Default value)

☞ **IDE Primary Master RAID**
- ⏩ Enabled — Enable 1st master channel IDE RAID function.
- ⏩ Disabled — Disable this function. (Default value)

☞ **IDE Primary Slave RAID**
- ⏩ Enabled — Enable 1st slave channel IDE RAID function.
- ⏩ Disabled — Disable this function. (Default value)

☞ **IDE Secndry Master RAID**
- ⏩ Enabled — Enable 2nd master channel IDE RAID function.
- ⏩ Disabled — Disable this function. (Default value)

☞ **IDE Secndry Slave RAID**
- ⏩ Enabled — Enable 2nd slave channel IDE RAID function.
- ⏩ Disabled — Disable this function. (Default value)

☞ **SATAII 1 Primary RAID**
- ⏩ Enabled — Enable SATAII 1 1st SATA RAID function.
- ⏩ Disabled — Disable this function.(Default value)

☞ **SATAII 1 Secondary RAID**
- ⏩ Enabled — Enable SATAII 1 2nd SATA RAID function.
- ⏩ Disabled — Disable this function.(Default value)

☞ **SATAII 2 Primary RAID**
- ⏩ Enabled — Enable SATAII 2 1st SATA RAID function.
- ⏩ Disabled — Disable this function.(Default value)

☞ **SATAII 2 Secondary RAID**
- ⏩ Enabled Enable SATAII 2 2nd SATA RAID function.
- ⏩ Disabled Disable this function.(Default value)

☞ **On-Chip USB**
- ⏩ V1.1+V2.0 Enable USB 1.1 and USB 2.0 controllers. (Default Value)
- ⏩ V1.1 Enable only USB 1.1 controller
- ⏩ Disabled Disable onchip USB support.

☞ **USB Keyboard Support**
- ⏩ Enabled Enable USB keyboard support.
- ⏩ Disabled Disable USB keyboard support. (Default value)

☞ **USB Mouse Support**
- ⏩ Enabled Enable USB mouse support.
- ⏩ Disabled Disable USB mouse support. (Default value)

☞ **AC97 Audio**
- ⏩ Auto Autodetect onboard AC'97 audio function. (Default value)
- ⏩ Disabled Disable this function.

☞ **Legacy USB storage detect**
- ⏩ Enabled Enable USB storage device boot.(Default value)
- ⏩ Disabled Disable this function.

☞ **Onboard LAN2 Function (Marvell 88E1111)**
- ⏩ Auto Autodetect onboard LAN2 chip function.(Default value)
- ⏩ Disabled Disable onboard LAN2 chip function.

☞ **Onboard 1394 Function**
- ⏩ Enabled Enable onboard IEEE1394 function.(Default value)
- ⏩ Disabled Disable onboard IEEE1394 function.

☞ **Onboard LAN Function (Agere ET1310)**
- ⏩ Enabled Enable onboard LAN chip function. (Default value)
- ⏩ Disabled Disable onboard LAN chip function.

☞ **Onboard Serial Port 1**
- ⏩ Auto BIOS will automatically setup the port 1 address.
- ⏩ 3F8/IRQ4 Enable onboard Serial port 1 and address is 3F8/IRQ4. (Default value)
- ⏩ 2F8/IRQ3 Enable onboard Serial port 1 and address is 2F8/IRQ3.
- ⏩ 3E8/IRQ4 Enable onboard Serial port 1 and address is 3E8/IRQ4.
- ⏩ 2E8/IRQ3 Enable onboard Serial port 1 and address is 2E8/IRQ3.
- ⏩ Disabled Disable onboard Serial port 1.

☞ **i-LOCK**
- ⏩ Enabled Enable the i-Lock function. (Default value)
- ⏩ Disabled Disable i-Lock function.

☞ **UART Mode Select**

This item allows you to determine which Infra Red(IR) function of Onboard I/O chip.
- ⏩ Normal Set onboard I/O chip UART to Normal Mode. (Default Value)
- ⏩ IrDA Set onboard I/O chip UART to IrDA Mode.
- ⏩ ASKIR Set onboard I/O chip UART to ASKIR Mode.
- ⏩ SCR Set onboard I/O chip UART to SCR Interface.

☞ **UR2 Duplex Mode**

This feature allows you to seclect IR mode.

This function will available when "UART Mode Select" doesn't set at Normal/SCR.

- ⏩ Half IR Function Duplex Half. (Default Value)
- ⏩ Full IR Function Duplex Full.

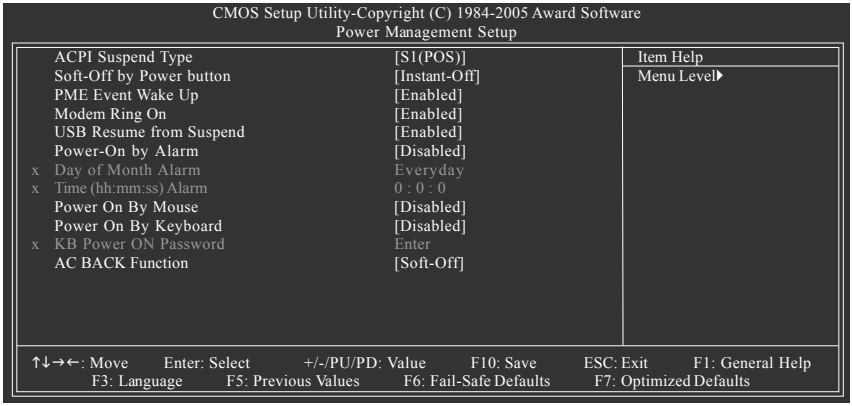
☞ **Onboard Parallel Port**

- ⏩ Disabled Disable onboard LPT port.
- ⏩ 378/IRQ7 Enable onboard LPT port and address is 378/IRQ7. (Default value)
- ⏩ 278/IRQ5 Enable onboard LPT port and address is 278/IRQ5.
- ⏩ 3BC/IRQ7 Enable onboard LPT port and address is 3BC/IRQ7.

☞ **Parallel Port Mode**

- ⏩ SPP Using Parallel port as Standard Parallel Port. (Default value)
- ⏩ EPP Using Parallel port as Enhanced Parallel Port.
- ⏩ ECP Using Parallel port as Extended Capabilities Port.
- ⏩ ECP+EPP Using Parallel port as ECP and EPP mode.

2-4 Power Management Setup



☞ **ACPI Suspend Type**

- S1(POS) Set ACPI suspend type to S1/POS(Power On Suspend). (Default value)
- S3(STR) Set ACPI suspend type to S3/STR(Suspend To RAM).

☞ **Soft-Off by Power button**

- Instant-Off Press power button then Power off instantly. (Default value)
- Delay 4 Sec. Press power button 4 sec. to Power off. Enter suspend if button is pressed less than 4 sec.

☞ **PME Event Wake Up**

This feature requires an ATX power supply that provides at least 1A on the 5VSB lead.

- Disabled Disable this function.
- Enabled Enable PME as wake up event. (Default value)

☞ **Modem Ring On**

An incoming call via modem can awake the system from any suspend state.

- Disabled Disable this function.
- Enabled Enable Modem Ring On function. (Default value)

☞ **USB Resume from Suspend**

- Disabled Disable this function.
- Enable Enable USB device wake up system from suspend mode.(Default value)

☞ **Power-On by Alarm**

You can set "Power-On by Alarm" item to enabled and key in Date/Time to power on system.

- Disabled Disable this function. (Default value)
- Enabled Enable alarm function to POWER ON system.

If Power-On by Alarm is Enabled.

- Day of Month Alarm : Everyday, 1~31
- Time (hh: mm: ss) Alarm : (0~23) : (0~59) : (0~59)

☞ **Power On By Mouse**

- ⏩ Disabled — Disabled this function. (Default value)
- ⏩ Double Click — Double click on PS/2 mouse left button to power on the system.

☞ **Power On By Keyboard**

- ⏩ Disabled — Disabled this function. (Default value)
- ⏩ Keyboard 98 — If your keyboard have "POWER Key" button, you can press the key to power on the system.
- ⏩ Password — Set password to power on the system.

☞ **KB Power ON Password**

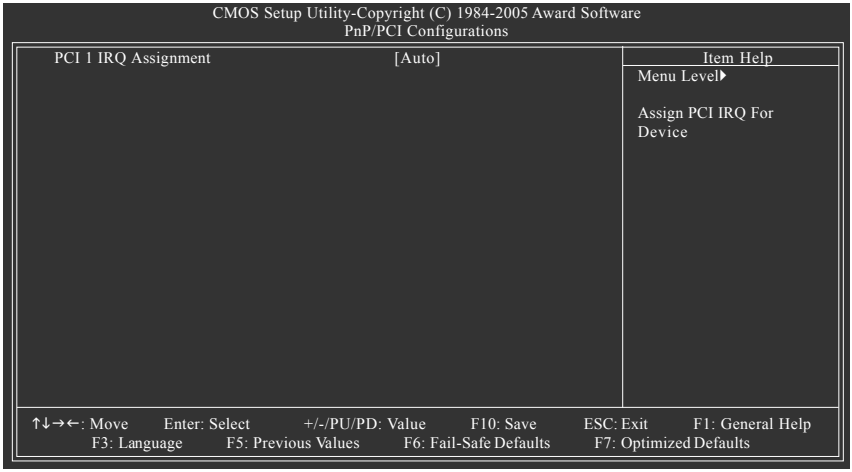
When "Power On by Keyboard" is set to Password, you can set the password here.

- ⏩ Enter — Input password (from 1 to 5 characters) and press Enter to set the Keyboard Power On password.

☞ **AC BACK Function**

- ⏩ Soft-Off — When AC-power back to the system, the system will be in "Off" state. (Default value)
- ⏩ Full-On — When AC-power back to the system, the system always in "On" state.

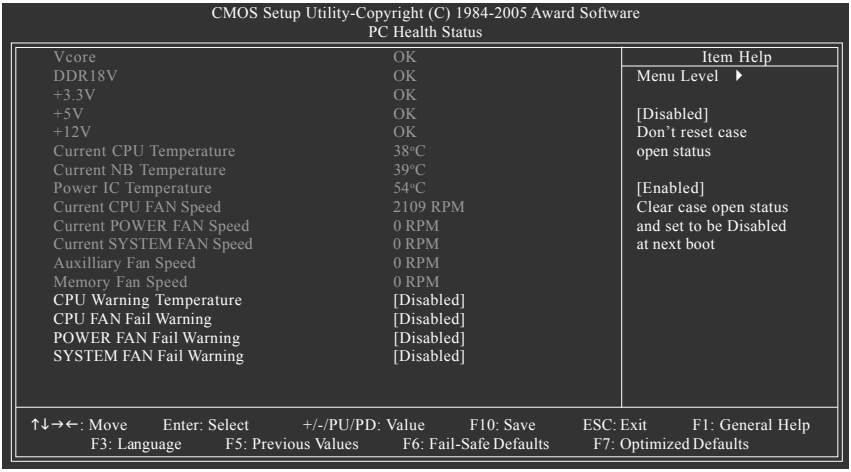
2-5 PnP/PCI Configurations



☞ **PCI 1 IRQ Assignment**

⏩ Auto	Auto assign IRQ to PCI 1. (Default value)
⏩ 3,4,5,7,9,10,11,12,14,15	Set IRQ 3,4,5,7,9,10,11,12,14,15 to PCI 1.

2-6 PC Health Status



☞ **Current Voltage(V) Vcore / DDR18V / +3.3V / +5V / +12V**

⏩ Detect system's voltage status automatically.

☞ **Current CPU / NB / Power IC Temperature**

⏩ Detect CPU / NB / Power IC temperature automatically.

☞ **Current CPU/POWER/SYSTEM/Auxilliary/Memory FAN Speed (RPM)**

⏩ Detect CPU/Power/System/Auxilliary/Memory fan speed status automatically.

☞ **CPU Warning Temperature**

⏩ 60°C / 140°F Monitor CPU temperature at 60°C / 140°F.

⏩ 70°C / 158°F Monitor CPU temperature at 70°C / 158°F.

⏩ 80°C / 176°F Monitor CPU temperature at 80°C / 176°F.

⏩ 90°C / 194°F Monitor CPU temperature at 90°C / 194°F.

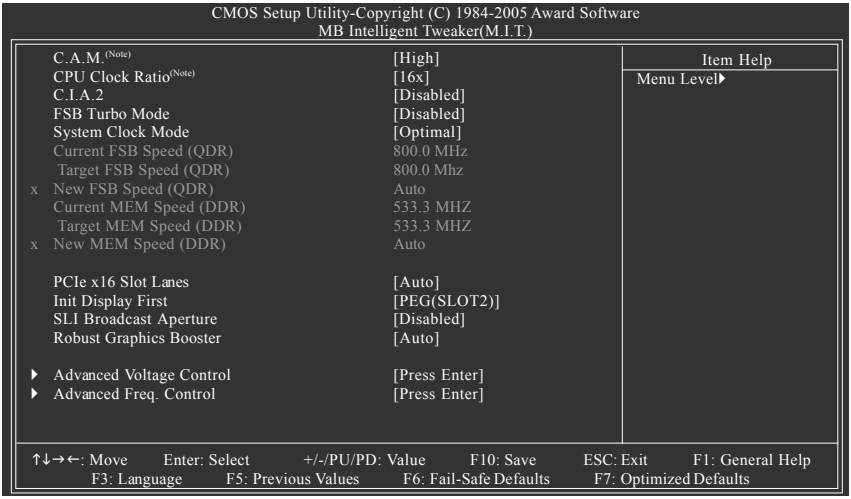
⏩ Disabled Disable this function. (Default value)

☞ **CPU/POWER/SYSTEM FAN Fail Warning**

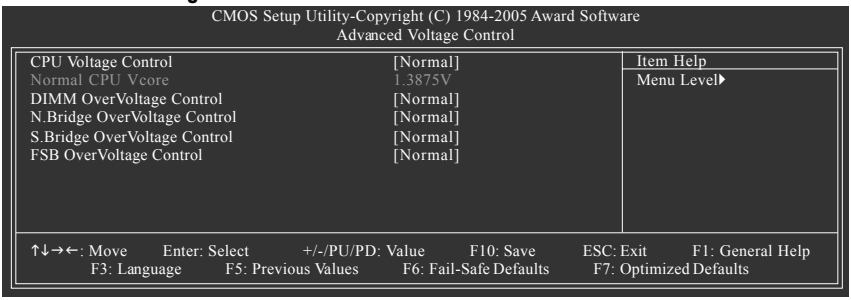
⏩ Disabled Disable CPU/Power/System fan fail warning function. (Default value)

⏩ Enabled Enable CPU/Power/System fan fail warning function.

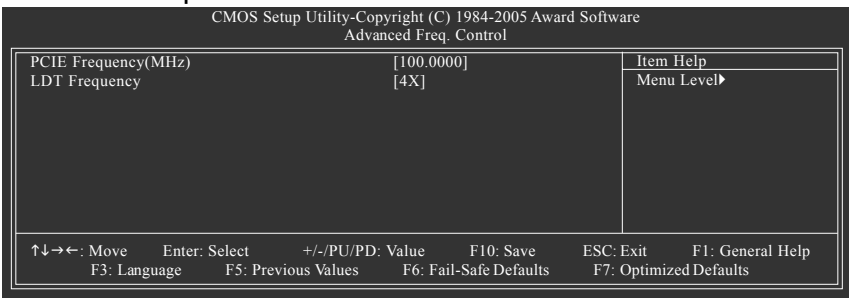
2-7 MB Intelligent Tweaker(M.I.T.)



☞ Advanced Voltage Control



☞ Advanced Freq. Control



CAUTION Incorrect using these features may cause your system broken. For power end-user use only.

(Note) This item will show up when you install a processor that supports this function.

☞ **C.A.M.** (Note)

- ⏩ High — Set clock ratio for frequency-locked CPU to High. (Default value)
- ⏩ Low — Set clock ratio for frequency-locked CPU to Low.

☞ **CPU Clock Ratio**(Note)

This setup option will automatically assign by CPU detection. The option will display "Locked" and read only or will not show up if the CPU ratio is not changeable.

☞ **C.I.A.2**

C.I.A.2 (CPU Intelligent Accelerator 2) is designed to detect CPU loading during software program executing, and automatically adjust CPU computing power to maximize system performance.

- ⏩ Disabled — Disable this function. (Default value)
- ⏩ Cruise — Set C.I.A.2 to Cruise. Automatically increase CPU frequency(5%,7%) by CPU loading.
- ⏩ Sports — Set C.I.A.2 to Sports. Automatically increase CPU frequency(7%,9%) by CPU loading.
- ⏩ Racing — Set C.I.A.2 to Racing. Automatically increase CPU frequency(9%,11%) by CPU loading.
- ⏩ Turbo — Set C.I.A.2 to Turbo. Automatically increase CPU frequency(15,17%) by CPU loading.
- ⏩ Full Thrust — Set C.I.A.2 to Full Thrust. Automatically increase CPU frequency(17%,19%) by CPU loading.

Warning: Stability is highly dependent on system components.

☞ **FSB Turbo Mode**

- ⏩ Disabled — Disable FSB Turbo Mode. (Default value)
- ⏩ Enabled — Enable FSB Turbo Mode.

☞ **System Clock Mode**

- ⏩ Optimal — Set FSB and memory speed automatically. (Default value)
- ⏩ Linked — Allows FSB and memory speed to be overclocked proportionally.
- ⏩ Expert — Enter FSB and memory speed manually.

☞ **Current FSB Speed (QDR)**

Displays the current CPU FSB speed.

☞ **Target FSB Speed (QDR)**

This item depends on the value set in New FSB Speed (QDR).

☞ **New FSB Speed (QDR)**

This item becomes active when System Clock Mode is set to Linked or Expert. Type in a new FSB speed or use the PLUS SIGN (+)/MINUS SIGN (-) to set the FSB speed.

☞ **Current MEM Speed (DDR)**

Displays the current memory speed.

☞ **Target MEM Speed (DDR)**

The value changes based on the value set in New FSB Speed (QDR) and New MEM Speed (DDR).

☞ **New MEM Speed (DDR)**

This item becomes active when System Clock Mode is set to Expert. Type in a new memory speed or use the PLUS SIGN (+)/MINUS SIGN (-) to set the memory speed.

☞ **PCIe x16 Slot Lanes**

It is dependent on setting of the SLI switch module (GC-SLISW-C19).

SLI Mode:

⏩ Auto /8-8-16-0 / 8-8-8-8 / 0-3D1-16-1 / 0-3D1-3D1-1 (Default value: Auto)

Normal Mode:

⏩ Auto / 1-16-16-1 / 0-16-8-8 / 1_16-3D1-1 (Default value: Auto)

[Auto] Automatic select the most optimized setting.

[1-16-16-1]

PEG in blue= x16

PEG in black=x1

[0-16-8-8]

PEG1=Disabled

PEG2=x16, PEG3&4=x8

[8-8-16-0]

PEG1&2=x8, PEG3=x16

PEG4=Disabled

[8-8-8-8]

PEGs are all x8

☞ **Init Display First**

This feature allows you to select the first initiation of the monitor display from which card when you install a PCI card and a PCI Express VGA card on the motherboard.

⏩ PCI Slot Set Init Display First to PCI VGA card.

⏩ PEG (SLOT2) Set Init Display First to PCI Express VGA card (Slot2). (Default value)

⏩ PEG (SLOT1) Set Init Display First to PCI Express VGA card (Slot1).

⏩ PEG (SLOT3) Set Init Display First to PCI Express VGA card (Slot3).

⏩ PEG (SLOT4) Set Init Display First to PCI Express VGA card (Slot4).

☞ **SLI Broadcast Aperture**

⏩ Auto Set SLI Broadcast Aperture to Auto.

⏩ Disabled Disable this function. (Default value)

☞ **Robust Graphics Booster**

Select the options can enhance the VGA graphics card bandwidth to get higher performance.

⏩ Auto Set Robust Graphics Booster to Auto. (Default value)

⏩ Fast Set Robust Graphics Booster to Fast.

⏩ Turbo Set Robust Graphics Booster to Turbo.

☞ **CPU Voltage Control**

⏩ Supports adjustable CPU Voltage at 0.0125V. (Default value: Normal)

Warning: CPU may be damaged or CPU life-cycle may be reduced when CPU is over-voltage.

☞ **DIMM OverVoltage Control**

- Supports adjustable DIMM OverVoltage at 0.05V.
- Normal Set DIMM OverVoltage Control to Normal. (Default value)
- +0.10V Set DIMM OverVoltage Control to +0.10V.
- +0.15V Set DIMM OverVoltage Control to +0.15V.
- +0.20V Set DIMM OverVoltage Control to +0.20V.
- +0.25V Set DIMM OverVoltage Control to +0.25V.
- +0.30V Set DIMM OverVoltage Control to +0.30V.
- +0.35V Set DIMM OverVoltage Control to +0.35V.
- +0.40V Set DIMM OverVoltrage Control to +0.40V.
- +0.45V Set DIMM OverVoltage Control to +0.45V.
- +0.50V Set DIMM OverVoltrage Control to +0.50V.
- +0.55V Set DIMM OverVoltage Control to +0.55V.

Warning: Increase DIMM Voltage may get more stable for overclock but it may make damage to DIMM module.

☞ **N. Bridge Voltage Control**

- Supports adjustable North Bridge OverVoltage at 0.05V.
- Normal Set N. Bridge Voltage Control to Normal. (Default value)
- +0.10V Set N. Bridge Voltage Control to +0.10V.
- +0.15V Set N. Bridge Voltage Control to +0.15V.
- +0.20V Set N. Bridge Voltage Control to +0.20V.
- +0.25V Set N. Bridge Voltage Control to +0.25V.
- +0.30V Set N. Bridge Voltage Control to +0.30V.
- +0.35V Set N. Bridge Voltage Control to +0.35V.
- +0.40V Set N. Bridge Voltrage Control to +0.40V.
- +0.45V Set N. Bridge Voltage Control to +0.45V.
- +0.50V Set N. Bridge Voltrage Control to +0.50V.
- +0.55V Set N. Bridge Voltage Control to +0.55V.

Warning: Increase N. Bridge Voltage may get more stable for overclock but it may make damage to PCI-E Device.

☞ **S. Bridge Voltage Control**

- Supports adjustable Sourth Bridge OverVoltage at 0.05V.
- Normal Set S. Bridge Voltage Control to Normal. (Default value)
- +0.10V Set S. Bridge Voltage Control to +0.10V.
- +0.15V Set S. Bridge Voltage Control to +0.15V.
- +0.20V Set S. Bridge Voltage Control to +0.20V.
- +0.25V Set S. Bridge Voltage Control to +0.25V.
- +0.30V Set S. Bridge Voltage Control to +0.30V.
- +0.35V Set S. Bridge Voltage Control to +0.35V.
- +0.40V Set S. Bridge Voltrage Control to +0.40V.
- +0.45V Set S. Bridge Voltage Control to +0.45V.
- +0.50V Set S. Bridge Voltrage Control to +0.50V.
- +0.55V Set S. Bridge Voltage Control to +0.55V.

Warning: Increase S. Bridge Voltage may get more stable for overclock but it may make damage to PCI-E Device.

☞ **FSB OverVoltage Control**

- Supports adjustable Front Side Bus OverVoltage at 0.025V.
- Normal — Set FSB OverVoltrage Control to Normal. (Default value)
- +0.025V — Set FSB OverVoltrage Control to +0.025V.
- +0.050V — Set FSB OverVoltrage Control to +0.050V.
- +0.075V — Set FSB OverVoltrage Control to +0.075V.
- +0.100V — Set FSB OverVoltrage Control to +0.100V.
- +0.125V — Set FSB OverVoltrage Control to +0.125V.
- +0.150V — Set FSB OverVoltrage Control to +0.150V.
- +0.175V — Set FSB OverVoltrage Control to +0.175V.

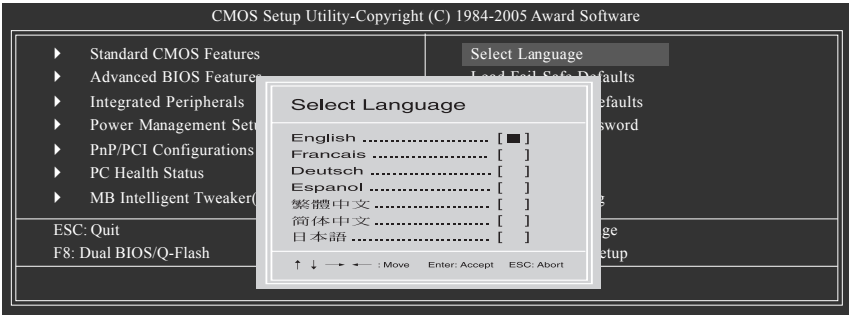
☞ **PCIE Frequency(MHz)**

- Display your PCIE Frequency.

☞ **LDT Frequency(MHz)**

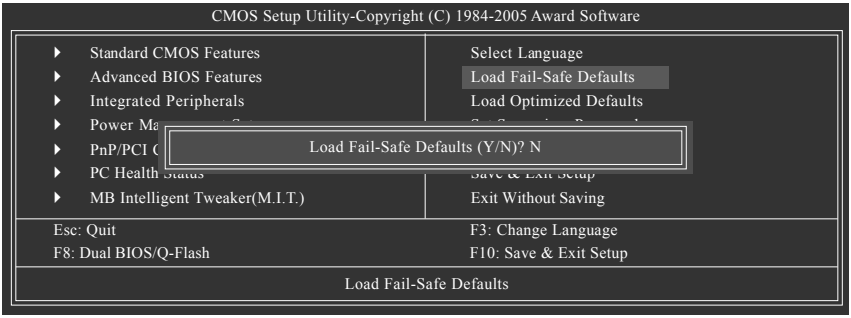
- Set LDT Frequency to 1X.
- Set LDT Frequency to 2X.
- Set LDT Frequency to 3X.
- Set LDT Frequency to 4X.(Default value)
- Set LDT Frequency to 5X.
- Set LDT Frequency to 3.5X.

2-8 Select Language



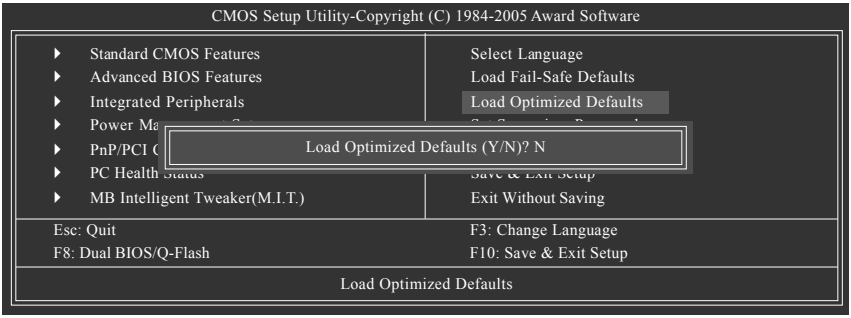
Multi-language supports 7 languages. There are English, French, German, Spanish, Traditional Chinese, Simplified Chinese, and Japanese.

2-9 Load Fail-Safe Defaults



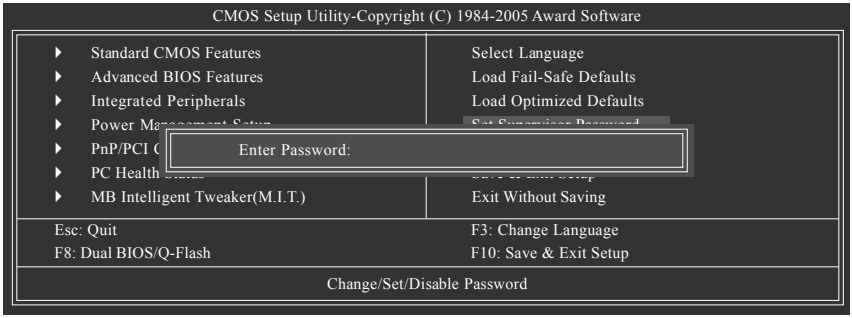
Fail-Safe defaults contain the most appropriate values of the system parameters that allow minimum system performance.

2-10 Load Optimized Defaults



Selecting this field loads the factory defaults for BIOS and Chipset Features which the system automatically detects.

2-11 Set Supervisor/User Password



When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Type the password, up to eight characters, and press <Enter>. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

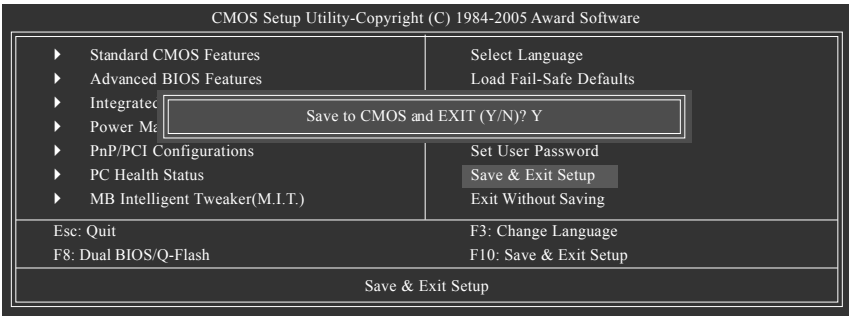
To disable password, just press <Enter> when you are prompted to enter password. A message "PASSWORD DISABLED" will appear to confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

The BIOS Setup program allows you to specify two separate passwords:
SUPERVISOR PASSWORD and a USER PASSWORD. When disabled, anyone may access all BIOS Setup program function. When enabled, the Supervisor password is required for entering the BIOS Setup program and having full configuration fields, the User password is required to access only basic items.

If you select "System" at "Password Check" in Advance BIOS Features Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup Menu.

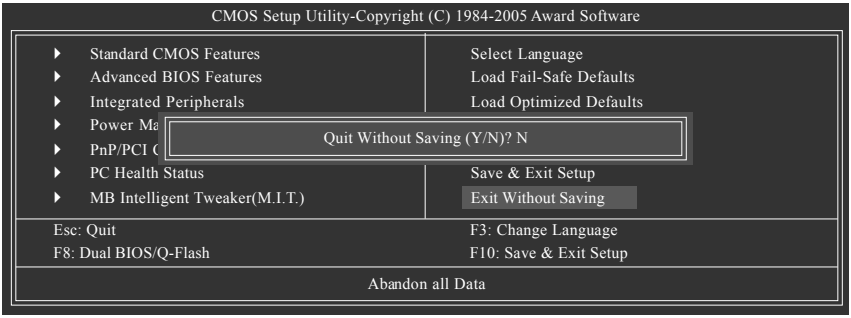
If you select "Setup" at "Password Check" in Advance BIOS Features Menu, you will be prompted only when you try to enter Setup.

2-12 Save & Exit Setup



Type "Y" will quit the Setup Utility and save the user setup value to RTC CMOS.
Type "N" will return to Setup Utility.

2-13 Exit Without Saving



Type "Y" will quit the Setup Utility without saving to RTC CMOS.
Type "N" will return to Setup Utility.

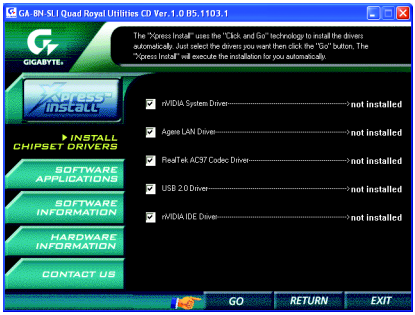
Chapter 3 Drivers Installation

NOTE

Pictures below are shown in Windows XP.
Insert the driver CD-title that came with your motherboard into your CD-ROM drive, the driver CD-title will auto start and show the installation guide. If not, please double click the CD-ROM device icon in "My computer", and execute the Setup.exe.

3-1 Install Chipset Drivers

After insert the driver CD, "Xpress Install" will scan automatically the system and then list all the drivers that recommended to install. The "Xpress Install" uses the"Click and Go" technology to install the drivers automatically. Just select the drivers you want then click the "GO" button. The "Xpress Install" will execute the installation for you automatically.



NOTE

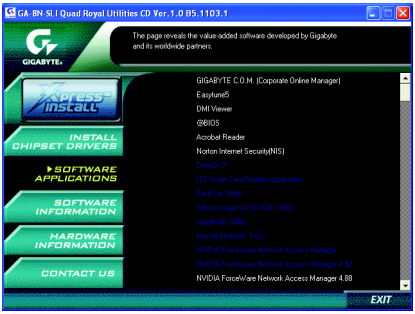
Some device drivers will restart your system automatically. After restarting your system the "Xpress Install" will continue to install other drivers.
System will reboot automatically after install the drivers, afterward you can install others application.

CAUTION

For USB2.0 driver support under Windows XP operating system, please use Windows Service Pack. After install Windows Service Pack, it will show a question mark "?" in "Universal Serial Bus controller" under "Device Manager". Please remove the question mark and restart the system (System will auto-detect the right USB2.0 driver).

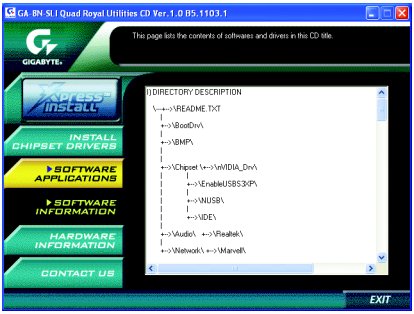
3-2 Software Application

This page displays all the tools that Gigabyte developed and some free software, you can choose anyone you want and press "install" to install them.



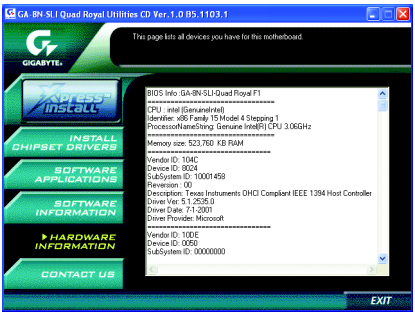
3-3 Software Information

This page lists the contents of software and drivers in this CD-title.



3-4 Hardware Information

This page lists all device you have for this motherboard.



3-5 Contact Us

Please see the last page for details.



Chapter 4 Appendix

4-1 Unique Software Utilities

(Not all model support these Unique Software Utilities, please check your MB features.)

U-PLUS D.P.S. (Universal Plus Dual Power System)

The U-Plus Dual Power System (U-Plus DPS) is a revolutionary eight-phase power circuit built for ultimate system protection. Designed to withstand varying current levels and changes, the U-Plus D.P.S. provides an immensely durable and stable power circuit to the CPU for solid system stability. These characteristics make it the ideal companion with the latest LGA775 Intel® Pentium® 4 Processor as well as future Intel® processors. As well, 4 blue LED's are mounted on the U-Plus D.P.S. for intelligent indication of system loading.

M.I.T. (Motherboard Intelligent Tweaker)

Motherboard Intelligent Tweaker (M.I.T.) allows user to access and change BIOS feature settings with relative speed and ease. Through GIGABYTE M.I.T. feature the user is no longer required to switch into different modes within BIOS setup in order to change system settings such as the CPU system bus, memory timings or to enabled Gigabyte's unique C.I.A. 2 and M.I.B. 2 features. M.I.T.'s integration of all platform performance settings into a single mode now gives any user the ability to control and enhance their computer system to the desired level.

C.I.A.2 (CPU Intelligent Accelerator 2)

GIGABYTE CPU Intelligent Accelerator 2(C.I.A. 2) is designed to automatically adjust CPU computing power to maximize system performance. When enabled, the program detects the current CPU loading and automatically accelerates the CPU computing performance to allow for a faster and smoother execution of programs. When the function is disabled, the CPU is returned to its initial status.

M.I.B.2 (Memory Intelligent Booster 2)

Built on the original M.I.B., the new Memory Intelligent Booster 2 (M.I.B. 2) is designed especially to maximize memory performance and boost memory bandwidth up to 10%. With added branded memory module information, users are able to optimize memory performance by selecting from a recommended memory module list.

S.O.S. (System Overclock Saver)

System Overclock Saver (S.O.S.) is a unique feature that eliminates system boot-up errors resulting from system over-enhancement by the user. With GIGABYTE's proprietary S.O.S. feature, users no longer need to open up the PC chassis and short-circuit the "Clear CMOS" pins or the battery on the motherboard to reset the system back to factory default settings. Instead, S.O.S. automatically resets the overclocked system settings back to their factory defaults to provide a more user-friendly and reliable platform for users.

Download Center

Download Center allows users to quickly download and update their BIOS as well as the latest drivers for their system. Download Center automatically runs a system check of the user PC and provides the user with the current system information as well as displaying a detailed list of all new drivers with the option for download.

C.O.M. (Corporate Online Management)

A web-based system management tool that allows system hardware information such as CPU, memory, graphics card, etc. to be monitored and controlled via the Internet, C.O.M. allows corporate MIS engineers to easily maintain corporate computers such as providing the most up-to-date drivers and BIOS.(Do not use C.O.M. and @BIOS at the same time.)

4-1-1 EasyTune 5 Introduction

EasyTune 5 presents the most convenient Windows based system performance enhancement and manageability utility. Featuring several powerful yet easy to use tools such as 1) Overclocking for enhancing system performance, 2) C.I.A. and M.I.B. for special enhancement for CPU and Memory, 3) Smart-Fan control for managing fan speed control of both CPU cooling fan and North-Bridge Chipset cooling fan, 4) PC health for monitoring system status.(Note)

User Interface Overview



	Button / Display	Description
1.	Overclocking	Enters the Overclocking setting page
2.	C.I.A./C.I.A.2 and M.I.B./M.I.B.2	Enters the C.I.A./2 and M.I.B./2 setting page
3.	Smart-Fan	Enters the Smart-Fan setting page
4.	PC Health	Enters the PC Health setting page
5.	GO	Confirmation and Execution button
6.	"Easy Mode" & "Advance Mode"	Toggles between Easy and Advance Mode
7.	Display screen	Display panel of CPU frequency
8.	Function display LEDs	Shows the current functions status
9.	GIGABYTE Logo	Log on to GIGABYTE website
10.	Help button	Display EasyTune™ 5 Help file
11.	Exit or Minimize button	Quit or Minimize EasyTune™ 5 software

(Note) EasyTune 5 functions may vary depending on different motherboards.

4-1-2 Xpress Recovery2 Introduction

Xpress Recovery2 is designed to provide quick backup and restoration of hard disk data. Supporting Microsoft operating systems including Windows XP/2000/NT/98/Me and DOS, and file systems including FAT16, FAT32, and NTFS, Xpress Recovery2 is able to back up data on hard disks on PATA and SATA IDE controllers. After Xpress Recovery2 is executed from CD-ROM for the first time, it will stay permanent in your hard disk. If you wish to run Xpress Recovery2 later, you can simply press F9 during system bootup to enter Xpress Recovery2 without the CD-ROM.

System requirements:

1. Intel x86 platforms
2. At least 64M bytes of system memory
3. VESA-supported VGA cards

How to use the Xpress Recovery2

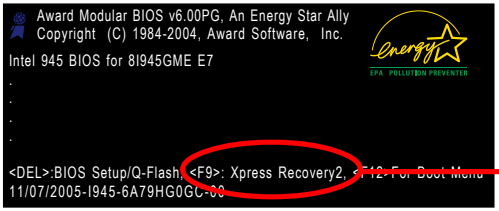
Initial access by booting from CD-ROM and subsequent access by pressing the F9 key:

Steps: After entering BIOS Setup, go to **Advanced BIOS Feature** and set to boot from CD-ROM. Save the settings and exit the BIOS Setup. Insert the provided driver CD into your CD-ROM drive. Upon system restart, the message which says "Boot from CD/DVD:" will appear in the bottom left corner of the screen. Press any key to enter Xpress Recovery2.

After the steps above are completed, subsequent access to Xpress Recovery2 can be made by simply pressing the <F9> key during system power-on.



Boot from CD/DVD:



<F9> Xpress Recovery2

NOTE

1. If you have already entered Xpress Recovery2 by booting from the CD-ROM, you can enter Xpress Recovery2 by pressing the <F9> key in the future.
2. System storage capacity and the reading/writing speed of the hard disk will affect the data backup speed.
3. It is recommended that Xpress Recovery2 be immediately installed once you complete installations of OS and all required drivers as well as software.

The Main Screen of Xpress Recovery2



1. RESTORE:

Restore the backed-up data to your hard disk. (This button will not appear if there is no backup file.)

2. BACKUP:

Back up data from hard disk.

3. REMOVE:

Remove previously-created backup files to release disk space.
(This button will not appear if there is no backup file.)

4. REBOOT:

Exit the main screen and restart the system.

Limitations:

1. Not compatible to Xpress Recovery.
2. For the use of Xpress Recovery2, a primary partition must be reserved.
3. Xpress Recovery2 will store the backup file at the end of the hard disk, so free space available on the hard disk for the backup file must be allocated in advance. (A minimum 4GB is recommended but the actual space is dependent on the size of the data to be backed up)
4. Capable of backing up hard disks installed with Windows operating systems including DOS and Windows XP/2000/NT/9x/Me.
5. USB hard disks are currently not supported.
6. Does not support RAID/AHCI (class code 0104/0106) hard disks.
7. Capable of backing up and restoring only the first physical hard disk.

Hard disks detection sequence is as follows:

a. PATA IDE primary channel
b. PATA IDE secondary channel
c. SATA IDE channel 1
d. SATA IDE channel 2
e. SATA IDE channel 3
f. SATA IDE channel 4

Precautions:

1. When using hard disks with more than 128G under Windows 2000, be sure to execute the EnableBigLba.*exe* program from the driver CD before data backup.
2. It is normal that data backup takes longer time than data restoration.
3. Xpress Recovery2 is compliant with the GPL regulations.
4. On a few motherboards based on Nvidia chipsets, BIOS update is required for Xpress Recovery2 to correctly identify RAID and SATA IDE mode. Please contact your motherboard manufacturer.
5. Xpress Recovery2 supports only PATA hard disks and not SATA hard disks on the following motherboards (As this is a BIOS-related issue, it can be solved by BIOS update)

GA-K8U	GA-K8NXP-9	GA-8N-SLI Royal
GA-K8U-9	GA-K8N Ultra-9	GA-8N-SLI Pro
GA-K8NXP-SLI	GA-K8NF-9 (PCB Ver. 1.0)	GA-8N-SLI
GA-K8N Ultra-SLI	GA-K8NE (PCB Ver. 1.0)	
GA-K8N Pro-SLI	GA-K8NMF-9	

4-1-3 Flash BIOS Method Introduction

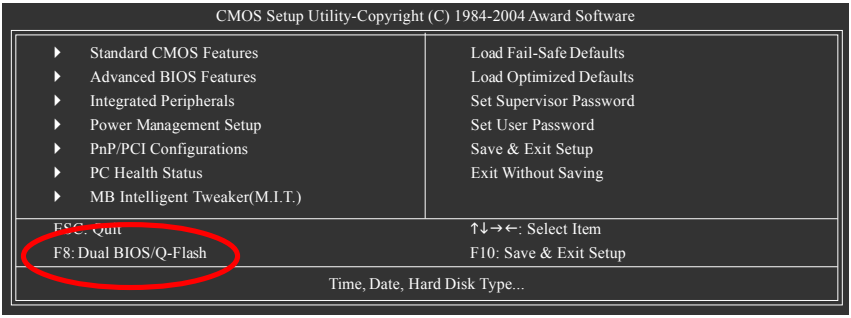
A. What is Dual BIOS Technology?

Dual BIOS means that there are two system BIOS (ROM) on the motherboard, one is the Main BIOS and the other is Backup BIOS.

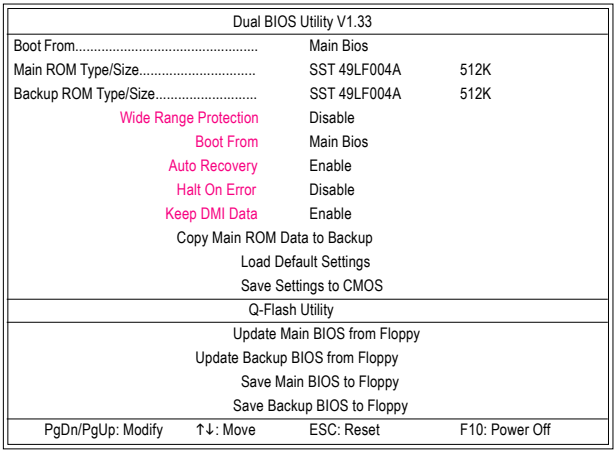
Under the normal circumstances, the system works on the Main BIOS. If the Main BIOS is corrupted or damaged, the Backup BIOS can take over while the system is powered on. This means that your PC will still be able to run stably as if nothing has happened in your BIOS.

B. How to use Dual BIOS and Q-Flash Utility?

a. After power on the computer, pressing <Del> immediately during POST (Power On Self Test) it will allow you to enter Award BIOS CMOS SETUP, then press <F8> to enter Flash utility.



b. Dual BIOS / Q-Flash Programming Utility



c. Dual BIOS Item explanation:

Wide Range Protection: Disable(Default), Enable

Status 1:

If any failure (ex. Update ESCD failure, checksum error or reset? occurs in the Main BIOS, just before the Operating System is loaded and after the power is on, and that the Wide Range Protection is set to "Enable", the PC will boot from Backup BIOS automatically.

Status 2:

If the ROM BIOS on peripherals cards(ex. SCSI Cards, LAN Cards,..) emits signals torequest restart of the system after the user make any alteration on it, the boot up BIOS will not be changed to the Backup BIOS.

Boot From : Main BIOS(Default), Backup BIOS

Status 1:

The user can set to boot from main BIOS or Backup BIOS.

Status 2:

If one of the main BIOS or the Backup BIOS fails, this item "Boot From : Main BIOS(Default)" will become gray and will not be changed by user.

Auto Recovery : Enable(Default), Disable

When one of the Main BIOS or Backup BIOS occurs checksum failure, the working BIOS will automatically recover the BIOS of checksum failure.

(In the Power Management Setup of the BIOS Setting, if ACPI Suspend Type is set to Suspend to RAM, the Auto Recovery will be set to Enable automatically.)

(If you want to enter the BIOS setting, please press "Del" key when the boot screen appears.)

Halt On Error : Disable(Default), Enable

If the BIOS occurs a checksum error or the Main BIOS occurs a WIDE RANGE PROTECTION error and Halt On Error set to Enable, the PC will show messages on the boot screen, and the system will pause and wait for the user's instruction.

If Auto Recovery :Disable, it will show <or the other key to continue.>

If Auto Recovery :Enable, it will show <or the other key to Auto Recover.>

Keep DMI Data : Enable(Default), Disable

Enable: The DMI data won't be replaced by flashing new BIOS.(recommend)

Disable: The DMI data will be replaced by flashing new BIOS.

Copy Main ROM Data to Backup

(If you boot from Backup ROM, this item will change to Copy Backup ROM Data to Main)

Auto recovery message:

BIOS Recovery: Main to Backup

The means that the Main BIOS works normally and could automatically recover the Backup BIOS.

BIOS Recovery: Backup to Main

The means that the Backup BIOS works normally and could automatically recover the Main BIOS.

(This auto recovery utility is set by system automatically and can't be changed by user.)

Load Default Settings

Load dual BIOS default value.

Save Settings to CMOS

Save revised setting.

Method 1 : Q-Flash™ Utility

Q-Flash™ is a BIOS flash utility embedded in Flash ROM. With this utility, users only have to stay in the BIOS menu when they want to update BIOS. Q-Flash™ allows users to flash BIOS without any utility in DOS or Windows. Using Q-Flash™ indicating no more fooling around with any complicated instructions and operating system since it is in the BIOS menu.

CAUTION

Please note that because updating BIOS has potential risk, please do it with caution!! We are sorry that Gigabyte Technology Co., Ltd is not responsible for damages of system because of incorrect manipulation of updating BIOS to avoid any claims from end-users.

Before You Begin:

Before you start updating BIOS with the Q-Flash™ utility, please follow the steps below first.

1. Download the latest BIOS for your motherboard from Gigabyte's website.
2. Extract the BIOS file downloaded and save the BIOS file (the one with model name.Fxx. For example, 8KNXPU.Fba) to a floppy disk.
3. Reboot your PC and press **Del** to enter BIOS menu.

The BIOS upgrading guides below are separated into two parts.
If your motherboard has dual-BIOS, please refer to **Part One**.
If your motherboard has single-BIOS, please refer to **Part Two**.

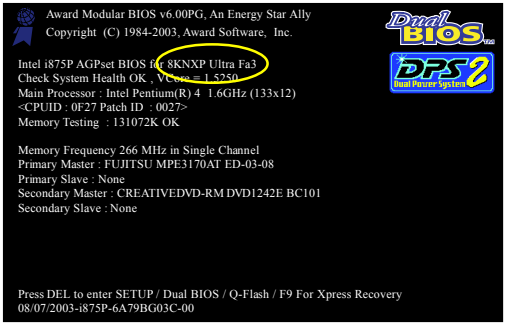
Part One:

Updating BIOS with Q-Flash™ Utility on Dual BIOS Motherboards.

Some of Gigabyte motherboards are equipped with dual BIOS. In the BIOS menu of the motherboards supporting Q-Flash and Dual BIOS, the Q-Flash utility and Dual BIOS utility are combined in the same screen. This section only deals with how to use Q-Flash utility.

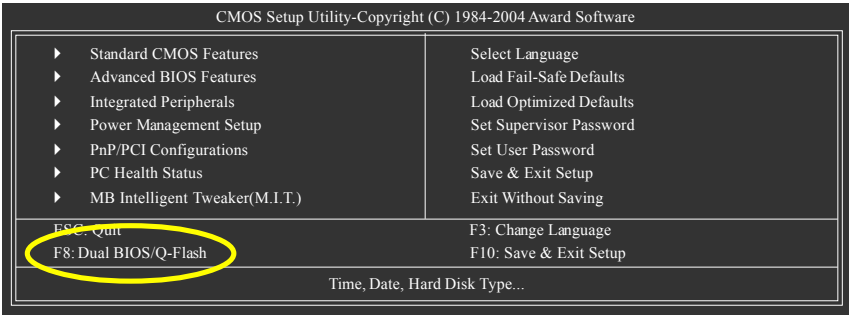
In the following sections, we take GA-8KNXP Ultra as the example to guide you how to flash BIOS from an older version to the latest version. For example, from Fa3 to Fba.

The BIOS file is Fa3 before updating



Entering the Q-Flash™ utility:

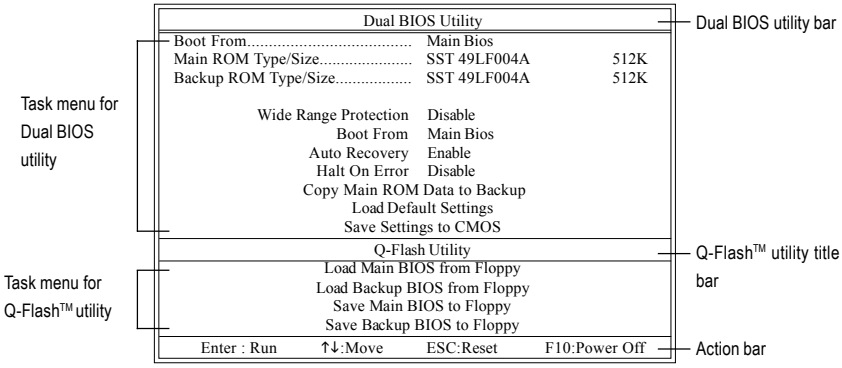
Step1: To use Q-Flash utility, you must press **Del** in the boot screen to enter BIOS menu.



Step 2: Press **F8** button on your keyboard and then **Y** button to enter the Dual BIOS/Q-Flash utility.

Exploring the Q-Flash™ / Dual BIOS utility screen

The Q-Flash / Dual BIOS utility screen consists of the following key components.



Task menu for Dual BIOS utility:

Contains the names of eight tasks and two item showing information about the BIOS ROM type. Blocking a task and pressing Enter key on your keyboard to enable execution of the task.

Task menu for Q-Flash utility:

Contains the names of four tasks. Blocking a task and pressing Enter key on your keyboard to enable execution of the task.

Action bar:

Contains the names of four actions needed to operate the Q-Flash/Dual BIOS utility. Pressing the buttons mentioned on your keyboards to perform these actions.

Using the Q-Flash™ utility:

This section tells you how to update BIOS using the Q-Flash utility. As described in the "Before you begin" section above, you must prepare a floppy disk having the BIOS file for your motherboard and insert it to your computer. If you have already put the floppy disk into your system and have entered the Q-Flash utility, please follow the steps below to flash BIOS.

Steps:

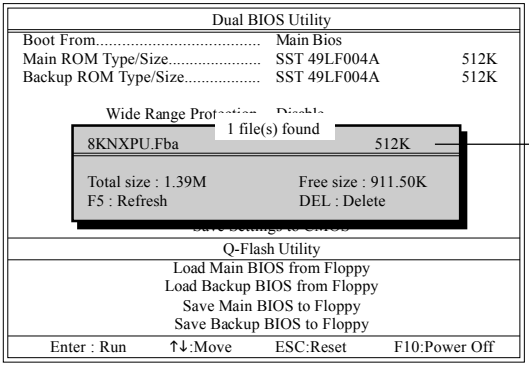
1. Press arrow buttons on your keyboard to move the light bar to "Load Main BIOS from Floppy" item in the Q-Flash menu and press Enter button.
   Later, you will see a box pop up showing the BIOS files you previously downloaded to the floppy disk.

NOTE If you want to save the current BIOS for backup purpose, you can begin Step 1 with "Save Main BIOS to Floppy" item.

2. Move to the BIOS file you want to flash and press **Enter**.

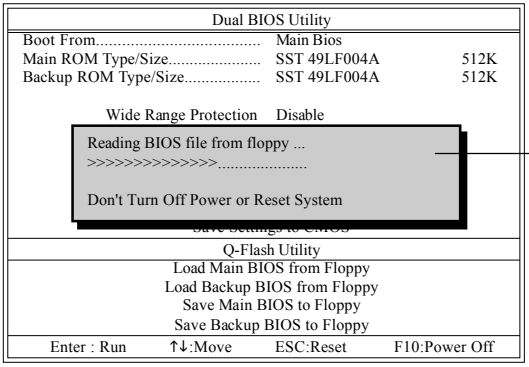
In this example, we only download one BIOS file to the floppy disk so only one BIOS file, 8KNXPU.Fba, is listed.

CAUTION Please confirm again you have the correct BIOS file for your motherboard.



BIOS file in the floppy disk.

After pressing **Enter**, you'll then see the progress of reading the BIOS file from the floppy disk.



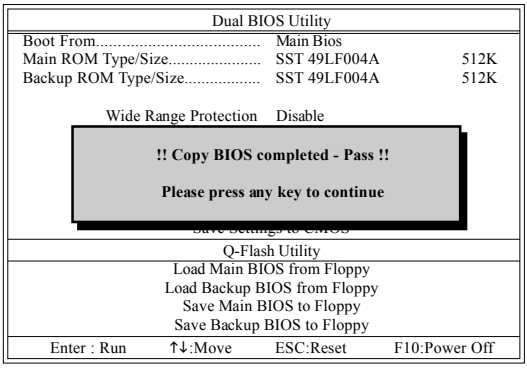
CAUTION Do not trun off power or reset your system at this stage!!

After BIOS file is read, you'll see a confirmation dialog box asking you "Are you sure to update BIOS?"

3. Press Y button on your keyboard after you are sure to update BIOS.
   Then it will begin to update BIOS. The progress of updating BIOS will be displayed.

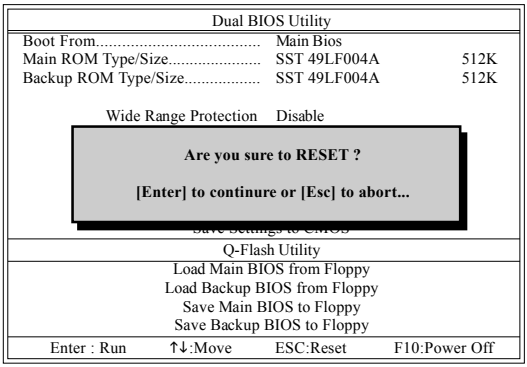
CAUTION Please do not take out the floppy disk when it begins flashing BIOS.

4. Press any keys to return to the Q-Flash menu when the BIOS updating procedure is completed.



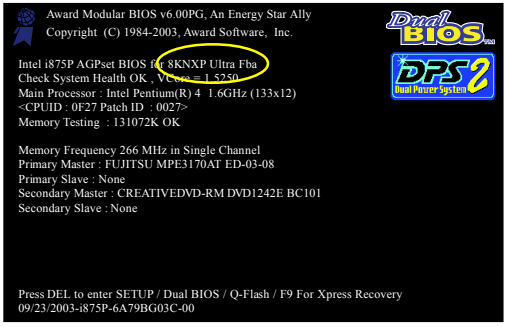
NOTE You can repeat Step 1 to 4 to flash the backup BIOS, too.

5. Press Esc and then Y button to exit the Q-Flash utility. The computer will restart automatically after you exit Q-Flash.

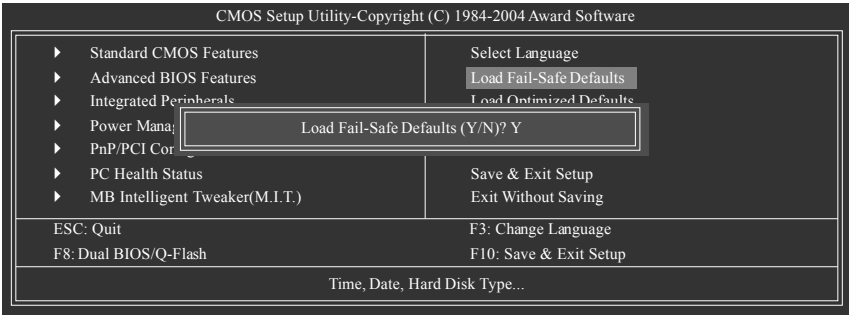


After system reboots, you may find the BIOS version on your boot screen becomes the one you flashed.

The BIOS file becomes Fba after updating.

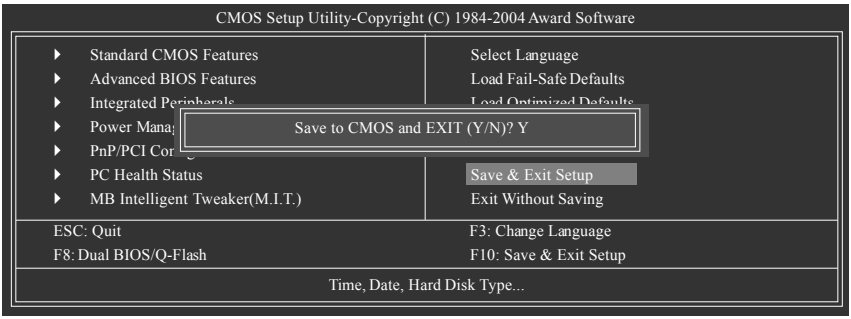


6. Press **Del** to enter BIOS menu after system reboots. When you are in BIOS menu, move to **Load Fail-Safe Defaults** item and press **Enter** to load BIOS Fail-Safe Defaults. Normally the system redetects all devices after BIOS has been upgraded. Therefore, we highly recommend reloading the BIOS defaults after BIOS has been upgraded.



Press **Y** on your keyboard to load defaults.

7. Select **Save & Exit Setup** item to save the settings to CMOS and exit the BIOS menu. System will reboot after you exit the BIOS menu. The procedure is completed.

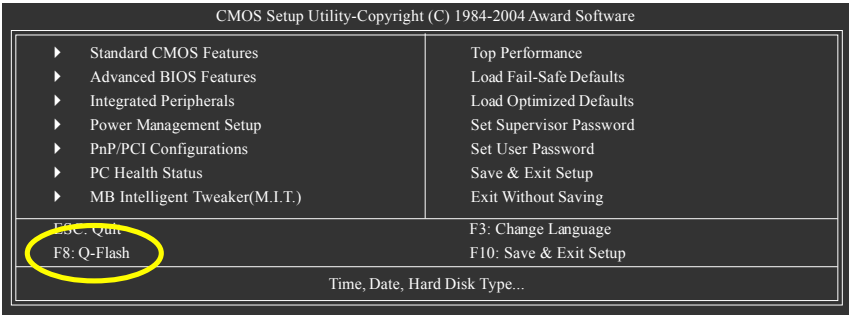


Press **Y** on your keyboard to save and exit.

Part Two:

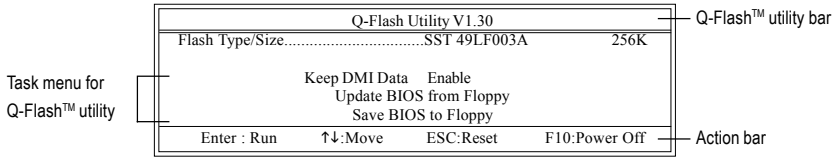
Updating BIOS with Q-Flash™ Utility on Single-BIOS Motherboards.

This part guides users of single-BIOS motherboards how to update BIOS using the Q-Flash™ utility.



Exploring the Q-Flash™ utility screen

The Q-FlashBIOS utility screen consists of the following key components.



Task menu for Q-Flash utility:

Contains the names of three tasks. Blocking a task and pressing Enter key on your keyboard to enable execution of the task.

Action bar:

Contains the names of four actions needed to operate the Q-Flash utility. Pressing the buttons mentioned on your keyboards to perform these actions.

Using the Q-Flash™ utility:

This section tells you how to update BIOS using the Q-Flash utility. As described in the "Before you begin" section above, you must prepare a floppy disk having the BIOS file for your motherboard and insert it to your computer. If you have already put the floppy disk into your system and have entered the Q-Flash utility, please follow the steps below to flash BIOS.

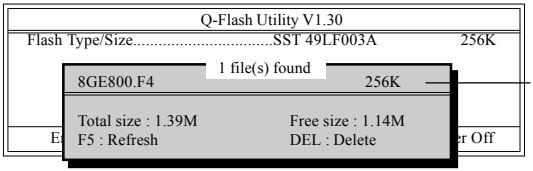
Steps:

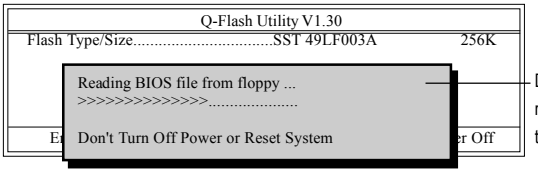
1. Press arrow buttons on your keyboard to move the light bar to "Update BIOS from Floppy" item in the Q-Flash menu and press Enter button.
   Later, you will see a box pop up showing the BIOS files you previously downloaded to the floppy disk.

NOTE If you want to save the current BIOS for backup purpose, you can begin Step 1 with "Save BIOS to Floppy" item.

2. Move to the BIOS file you want to flash and press Enter.
   In this example, we only download one BIOS file to the floppy disk so only one BIOS file, 8GE800.F4, is listed.

CAUTION Please confirm again you have the correct BIOS file for your motherboard.

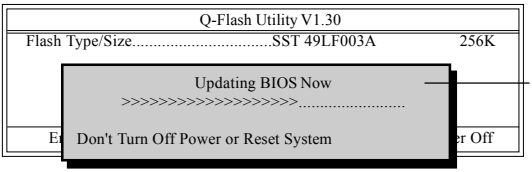




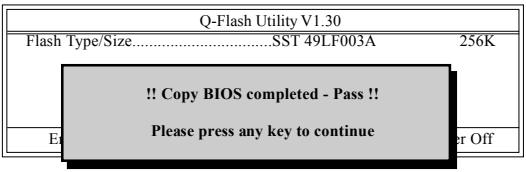
After BIOS file is read, you'll see a confirmation dialog box asking you "Are you sure to update BIOS?"

CAUTION Please do not take out the floppy disk when it begins flashing BIOS.

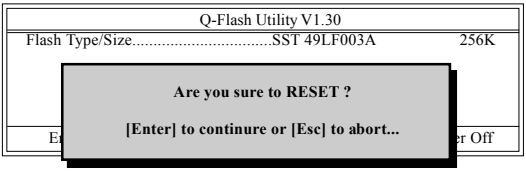
3. Press Y button on your keyboard after you are sure to update BIOS.
   Then it will begin to update BIOS. The progress of updating BIOS will be shown at the same time.



4. Press any keys to return to the Q-Flash menu when the BIOS updating procedure is completed.

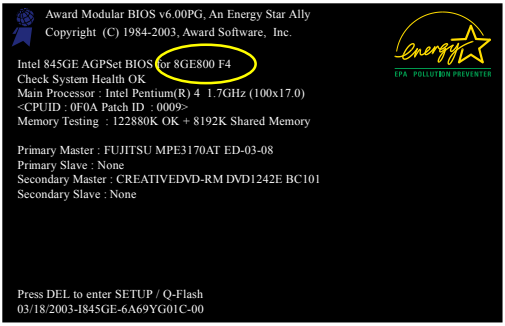


5. Press Esc and then Y button to exit the Q-Flash utility. The computer will restart automatically after you exit Q-Flash.



After system reboots, you may find the BIOS version on your boot screen becomes the one you flashed.

The BIOS file becomes F4 after updating



6. Press Del to enter BIOS menu after system reboots and "Load BIOS Fail-Safe Defaults". See how to Load BIOS Fail-Safe Defaults, please kindly refer to Step 6 to 7 in **Part One**.

Congratulation!! You have updated BIOS successfully!!

Method 2 : @BIOS™ Utility

If you do not have a DOS startup disk, we recommend that you use the new @BIOS utility. @BIOS allows users to update their BIOS under Windows. Just select the desired @BIOS server to download the latest version of BIOS.

Fig 1. Installing the @BIOS utility

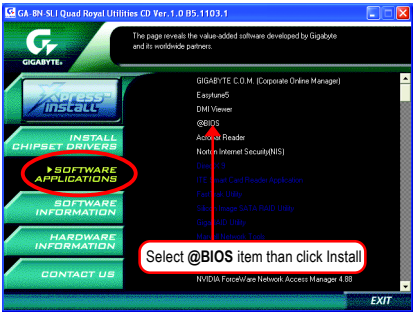


Fig 2. Installation complete and run @BIOS

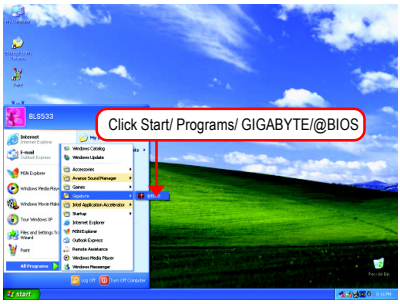


Fig 3. The @BIOS utility

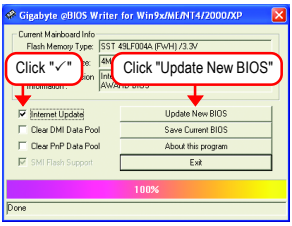
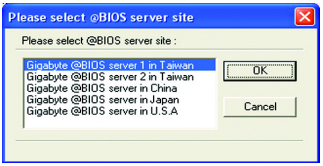


Fig 4. Select the desired @BIOS server



1. Methods and steps:

I. Update BIOS through Internet

a. Click "Internet Update" icon
b. Click "Update New BIOS" icon
c. Select @BIOS™ sever
d. Select the exact model name on your motherboard
e. System will automatically download and update the BIOS.

II. Update BIOS NOT through Internet:

a. Do not click "Internet Update" icon
b. Click "Update New BIOS"
c. Please select "All Files" in dialog box while opening the old file.
d. Please search for BIOS unzip file, downloading from internet or any other methods (such as: 8NSLIQ.F1).
e. Complete update process following the instruction.

III. Save BIOS
In the very beginning, there is "Save Current BIOS" icon shown in dialog box. It means to save the current BIOS version.

IV. Check out supported motherboard and Flash ROM:
In the very beginning, there is "About this program" icon shown in dialog box. It can help you check out which kind of motherboard and which brand of Flash ROM are supported.

2. Note:

I. In method I, if it shows two or more motherboard's model names to be selected, please make sure your motherboard's model name again. Selecting wrong model name will cause the system unbooted.
II. In method II, be sure that motherboard's model name in BIOS unzip file are the same as your motherboard's. Otherwise, your system won't boot.
III. In method I, if the BIOS file you need cannot be found in @BIOS™ server, please go onto Gigabyte's web site for downloading and updating it according to method II.
IV. Please note that any interruption during updating will cause system unbooted
V. Do not use @BIOS and C.O.M. (Corporate Online Management) at the same time.

4-1-4 Configuring SATA Hard Drive(s) (Controller: nVIDIA nForce4 SLI)

To configure SATA hard drive(s), follow the steps below:

(1) Install SATA hard drive(s) in your system.
(2) Configure SATA controller mode and boot sequence in BIOS Setup.
(3)* Configure RAID set in RAID BIOS.
(4) Make a floppy disk containing the SATA controller driver.
(5) Install the SATA controller driver during OS installation.

Before you begin

Please prepare:

(a) At least two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID, you may prepare only one hard drive.
(b) An empty formatted floppy disk.
(c) Windows XP/2000 setup disk.
(d) Driver CD for your motherboard.

(1) Installing SATA hard drive(s) in your computer

Attach one end of the SATA signal cable to the rear of the SATA hard drive and the other end to available SATA port(s) on the motherboard. If there are more than one SATA controller on your motherboard, you may refer to the motherboard user's manual to identify the SATA controller for the connector. Then connect the power connector from your power supply to the hard drive.

(2) Configuring SATA controller mode and boot sequence in BIOS Setup

You have to make sure whether the SATA controller is configured correctly in system BIOS Setup and set BIOS boot sequence for the SATA hard drive(s)/RAID array.

Step 1:

Turn on your computer and press Del to enter BIOS Setup during POST (Power-On Self Test). In the example in Figure 1, make sure that **Serial-ATAII 1** or **Serial-ATAII 2** under the **Integrated Peripherals** menu is enabled (**Serial-ATAII1** controls the SATAII0/1 connectors and **Serial-ATAII2** controls the SATAII2/3 connectors). If you wish to create RAID array, press ENTER on the **IDE/SATAII RAID Config** item to enter the submenu .

"*" Skip this step if you do not want to create RAID array on the SATA controller.

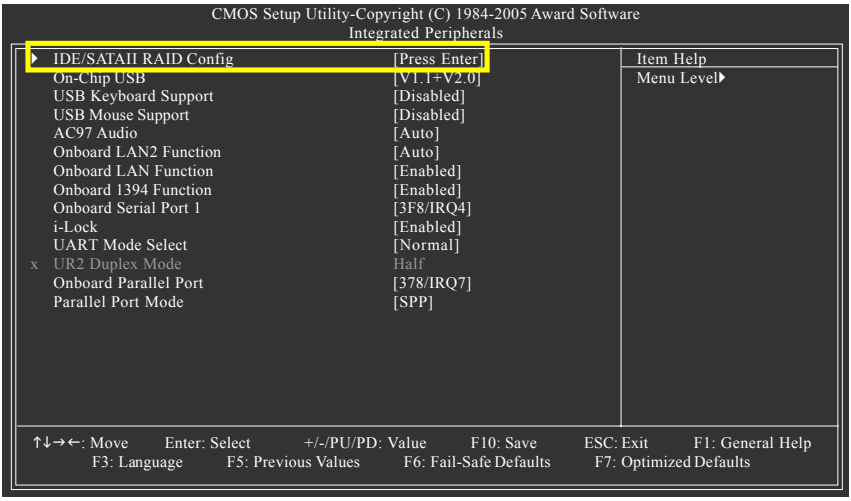


Figure 1

In the **IDE/SATAII RAID Config** submenu, enable **IDE/SATAII RAID function**. Then enable the SATA ports with hard disks that you want to use for RAID. In the example in Figure 2, enable **SATAII 1 Primary/Secondary RAID** or **SATAII 2 Primary/Secondary RAID**). (For example, if you wish to create RAID with hard disks on the SATAII0 and SATAII1 connectors, set **SATAII 1 Primary/Secondary RAID** to **Enabled)**.

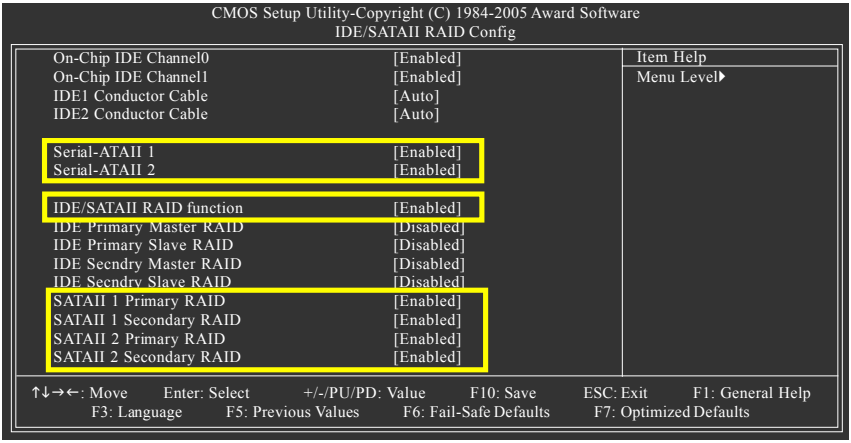


Figure 2

NOTE The BIOS Setup menus described in this section may not show the exact settings for your motherboard. The actual BIOS Setup menu options you will see shall depend on the motherboard you have and the BIOS version.

Step 2:

If you do not create RAID, select **Hard Disk Boot Priority** under the **Advanced BIOS Features** menu. In the **Hard Disk Boot Priority** submenu, select the model of the SATA hard drive onto which you wish to install Microsoft Windows 2000/XP. You should see a screen similar to Figure 3 below.

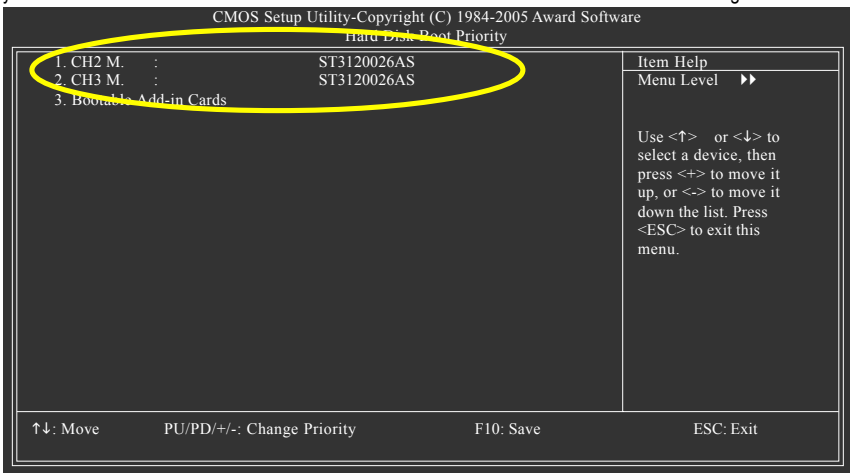


Figure 3

After configuring the SATA controller mode in system BIOS, if you wish to create RAID, save the settings and exit. Then go to RAID BIOS (refer to page 6) to configure the RAID array. After finished, re-enter the system BIOS Setup to set hard disk boot priority before OS installation. Select **Hard Disk Boot Priority** under the **Advanced BIOS Features** menu. In the **Hard Disk Boot Priority** submenu, select the RAID array onto which you wish to install Microsoft Windows 2000/XP (Figure 4).

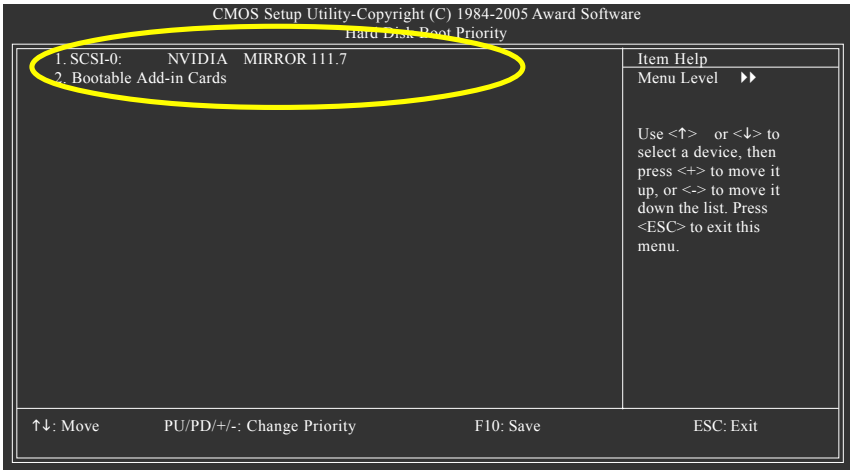


Figure 4

Step 3:

To boot from Windows installation CD-ROM, set **First Boot Device** under the **Advanced BIOS Features** menu to **CD-ROM** (Figure 5).

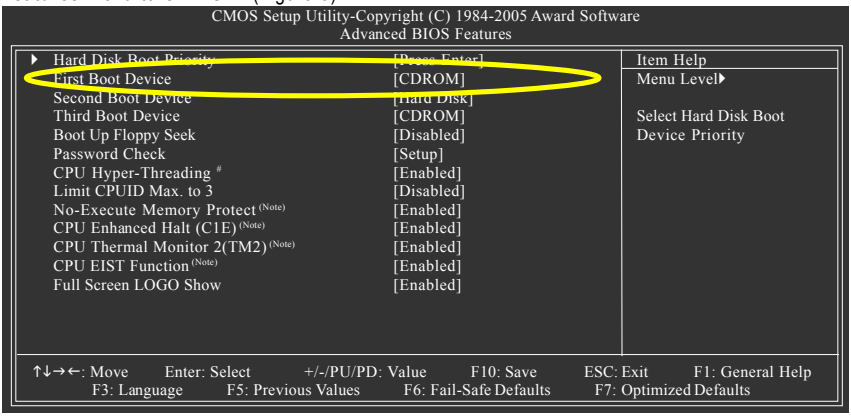


Figure 5

Step 4:

Save and exit BIOS Setup.

(3) Configuring RAID set in RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create RAID.

Step 1:

After the POST memory test begins and before the operating system boot begins, look for a message which says "Press F10 to enter RAID setup utility" (Figure 6). Hit the **F10** key to enter the RAID BIOS setup utility.



Figure 6

Step 2:

The Define a New Array screen is the first option screen when you enter the NVIDIA RAID setup utility. (Figure 7). You can press the TAB key to highlight through options.

Step 3:

In the RAID Mode field, use the UP or DOWN ARROW key to select a RAID mode. The supported RAID modes include Mirroring (default), Striping, Stripe Mirroring, Spanning and Raid 5. The following is an example of RAID 0 array creation.

Step 4:

If RAID 0 (Striping) is selected, you can manually set the striping block size. In the Striping Block field, use the UP or DOWN ARROW key to set the Striping Block size. The *KB* is the standard unit of Striping Block size. We recommend you leaving it to the default setting--Optimal (64K). The size range is from 4K to 128K.

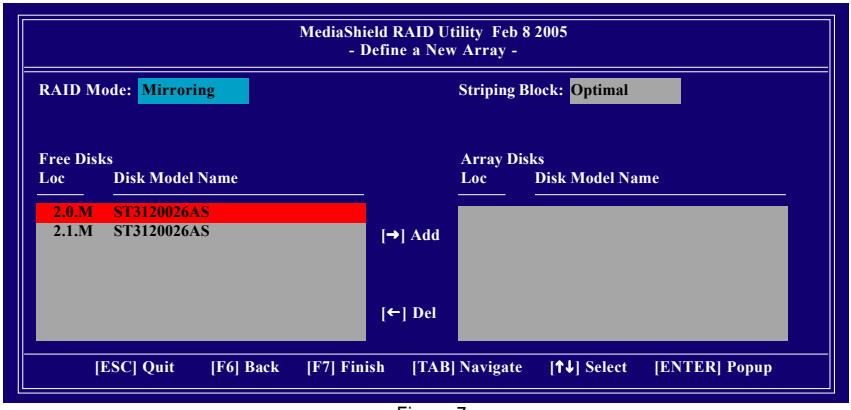


Figure 7

Step 5:

Next, select the hard drives which you wish to be included in the disk array. The Free Disks section displays the information about the currently installed SATA hard drives. Press the TAB key to move to the Free Disks section. Select the target hard drives using the UP or DOWN ARROW key and use the RIGHT ARROW key to add the hard drives to the Array Disks section (Figure 8).

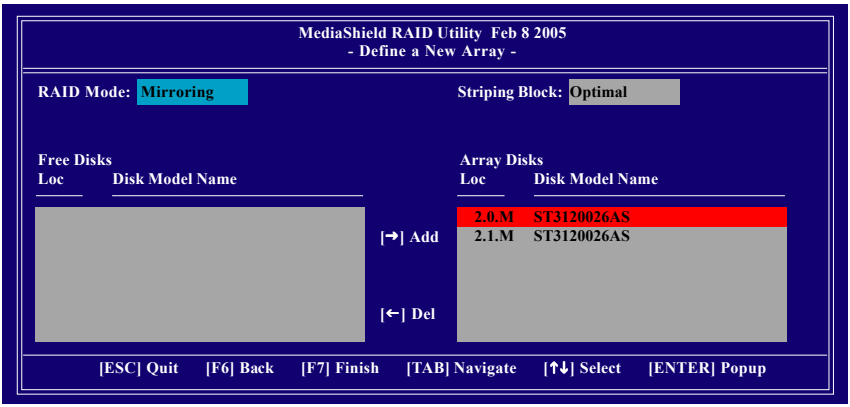


Figure 8

Step 6:

Press F7 after selecting the target hard disks. A message which says "Clear disk data?" will appear (Figure 9). If you are sure to clear the data in the selected hard drives, press Y. (If the hard drives contain previously created RAID array, you need to press Y to clear the data from the hard drives.)

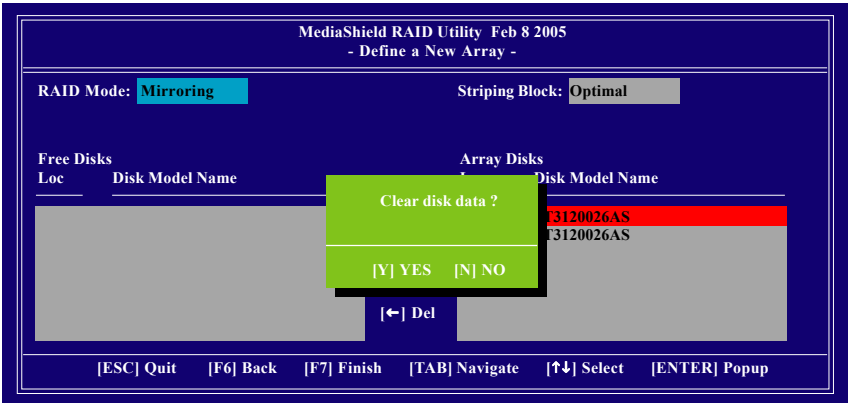


Figure 9

After that, the Array List screen displaying the RAID array you created will appear (Figure 10). If you want to set the disk array as boot device, use the UP or DOWN ARROW key to select the array and press B. The **Boot** section will show **Yes**.

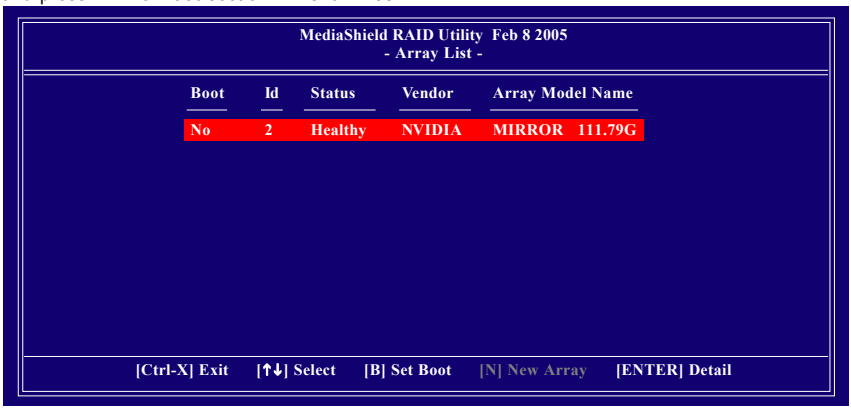


Figure 10

To read more information about the RAID array, press ENTER to enter the Array Detail screen (Figure 11), where you should see detailed information about RAID mode, disk block size, disk model name, and disk capacity, etc.

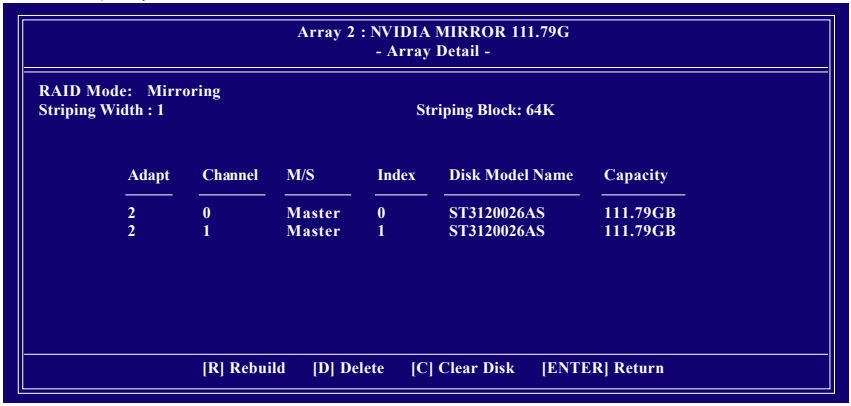


Figure 11

To delete the array, press D in the Array Detail screen. When the "Delete this array?" message appears, press Y to confirm or N to cancel. Press ENTER to return to the Array List screen.

To exit the Nvidia RAID utility, press ESC in the main menu or Ctrl+X in the Array List screen.

Now, you can proceed to install the SATA controller driver and operating system.

(4) Making a SATA controller driver disk

To install Windows 2000/XP onto a SATA hard drive/RAID array on the nVIDIA nForce4 SLI controller successfully, you need to install required driver for the SATA controller during OS installation. Without the driver, the hard drive/RAID array may not be recognized during the Windows setup process.

First of all, you need to copy the driver for the SATA controller from the motherboard driver CD to a floppy disk. The instructions below explain how to copy the driver.

Step 1: Find an available system and insert the motherboard driver CD into the CD-ROM drive. The installation utility will appear automatically. Quit the installation utility first.

Step 2: Go to **My Computer** and right-click the CD-ROM drive icon and select **Open** (Figure 12).



Figure 12

Step 3: Go to the **BootDrv** folder and look for an executable program named MENU.*exe* (Figure 13).

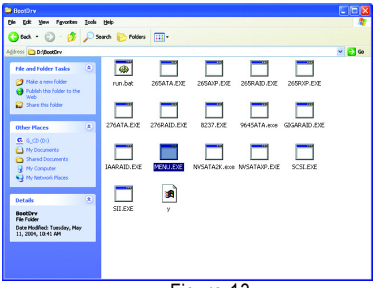


Figure 13

Step 4:
Double-click MENU.*exe*. An MS-DOS prompt screen similar to Figure 14 below will appear(Note).

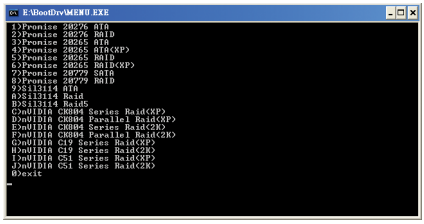


Figure 14

Step 5:
Insert an empty floppy disk and select the nVIDIA Serial ATA driver by pressing the corresponding letter from the menu (for example, from the menu in Figure 14, press C to select **nVIDIA CK804 Series Raid (XP)** if you wish to install Windows XP or press E to select **nVIDIA CK804 Series Raid (2K)** if you wish to install Windows 2000). Then it will take about one minute to copy the SATA driver from the motherboard driver CD to the floppy disk.

Step 6:
Press 0 to exit when the procedure is complete.

(Note): The name of the drivers in the menu might differ, depending on the version of your driver CD-ROM disk.

(5) Installing SATA controller driver during OS installation

Now that you have prepared the SATA driver disk and configured BIOS settings, you are ready to install Windows 2000/XP onto your SATA hard drive with the driver. The following is an example of Windows XP installation.

Step 1: Restart your system to boot from the Windows 2000/XP Setup disk and press F6 as soon as you see the "Press F6 if you need to install a 3rd party SCSI or RAID driver" message (Figure 15). After pressing F6, there will be a few moments of some files being loaded before you see the next screen.

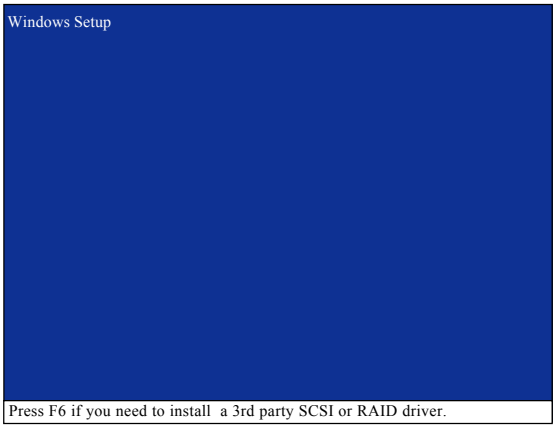


Figure 15

Step 2:
When a screen similar to that below appears (Figure 16), insert the floppy disk containing the SATA driver and press S.

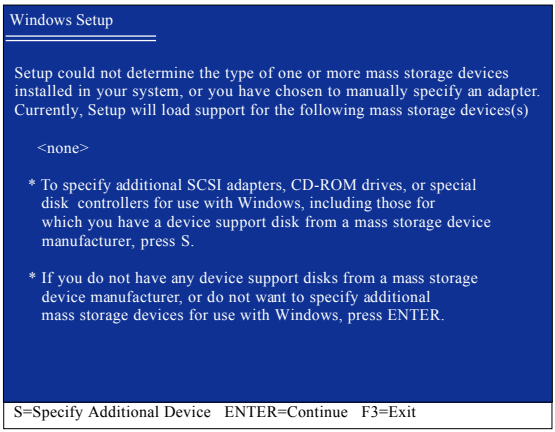


Figure 16

Step 3:

If Setup correctly recognizes the driver in the floppy disk, a controller menu similar to Figure 17 below will appear. Use the ARROW keys to select **NVIDIA RAID CLASS DRIVER*** (Figure 17) and press ENTER. Later, when a screen similar to Figure 18 appears, you must press S to select additional driver. The screen will return to previous screen as shown in Figure 17. Select **NVIDIA NForce Storage Controller** and press ENTER.

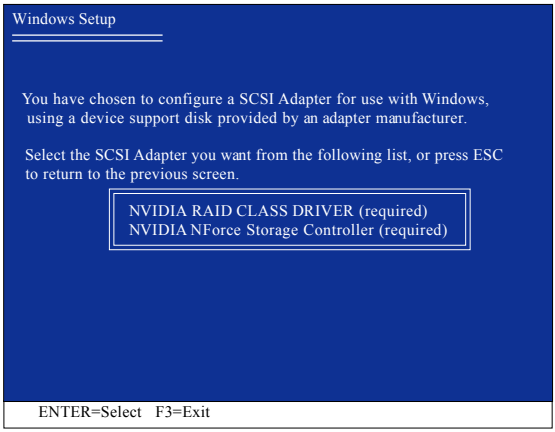


Figure 17

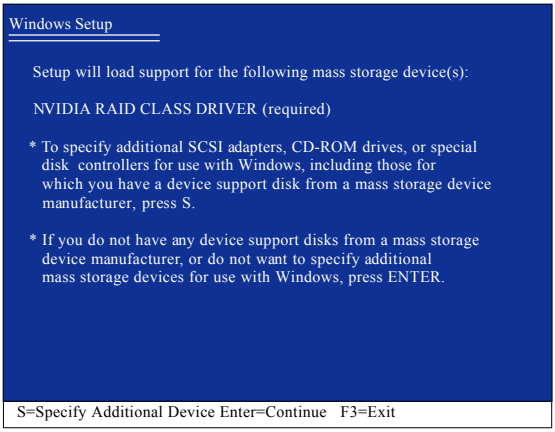


Figure 18

CAUTION If a message appears saying one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the motherboard driver CD.

"*" If you want to create RAID, select both **NVIDIA RAID CLASS DRIVER** and then **NVIDIA NForce Storage Controller**.
If you do not create RAID, select **NVIDIA NForce Storage Controller** only.

Step 4:

When the next screen (Figure 19) appears, press ENTER to continue the SATA driver installation from the floppy disk.

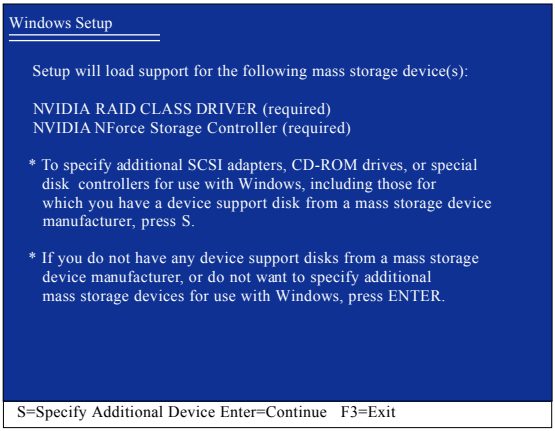


Figure 19

After the SATA controller driver installation is completed, you should see a screen similar to that below. You can proceed with the Windows 2000/XP installation now.

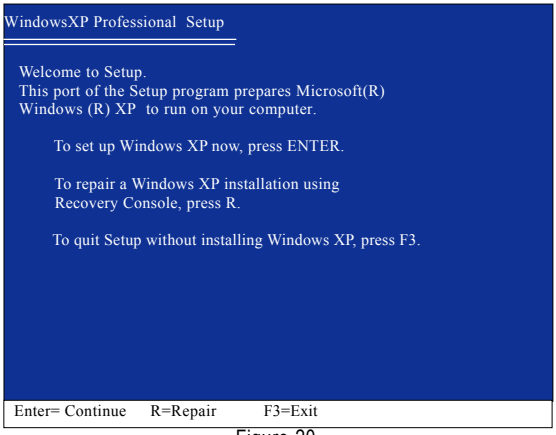


Figure 20

(6) Configuring a bootable RAID array with Microsoft Windows 2000

Problem: Users cannot install Windows 2000 with Service Pack 2 (or previous versions) to a bootable RAID volume.

There are two solutions to resolve this issue.

Solutions 1:

Use the NVRAID tool (nForce Driver Version 5.xx) to convert the boot volume to a RAID array. Here are the detailed step-by-step instructions:

Step 1:

Install Windows 2000 onto a selected hard drive. Download and install Windows 2000 Service Pack 4 from Microsoft's website.

Step 2:

After system restarts, press Del to enter system BIOS Setup during POST (Power-On Self Test). Under the **Integrated Peripherals** menu (Figure 21) assure the SATA port connecting the SATA hard disk (the one containing the Windows 2000) is **Enabled** (Figure 21/22). Save settings and exit the BIOS setup.

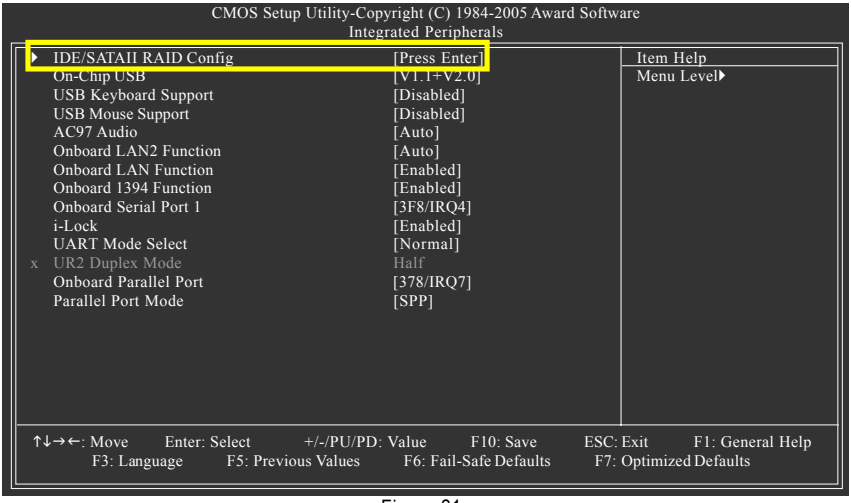


Figure 21

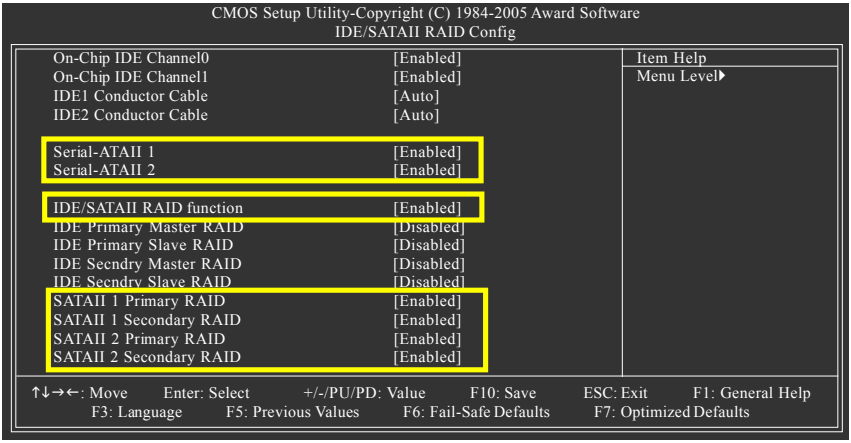


Figure22

Step 3:

After system restarts, press F10 to enter the NVIDIA RAID setup utility. Select Striping in the RAID Mode filed (Figure 23). Move to the Free Disks section with the TAB key. Select the desired disk and use the RIGHT ARROW key to add it to Array Disks menu.

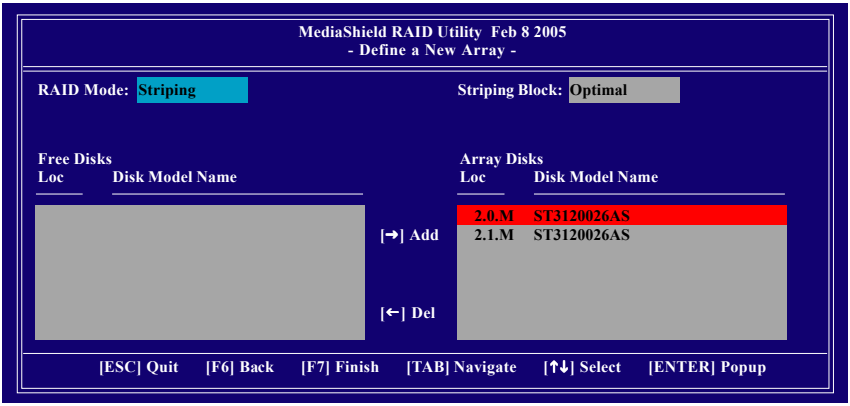


Figure 23

Step 4:

After all the settings, press F7 to complete the configuration. When prompted to **Clear Disk Data** (Figure 24), press N. Then press CTRL+X to exit the NVIDIA RAID BIOS. Restart the computer to boot into Windows 2000.

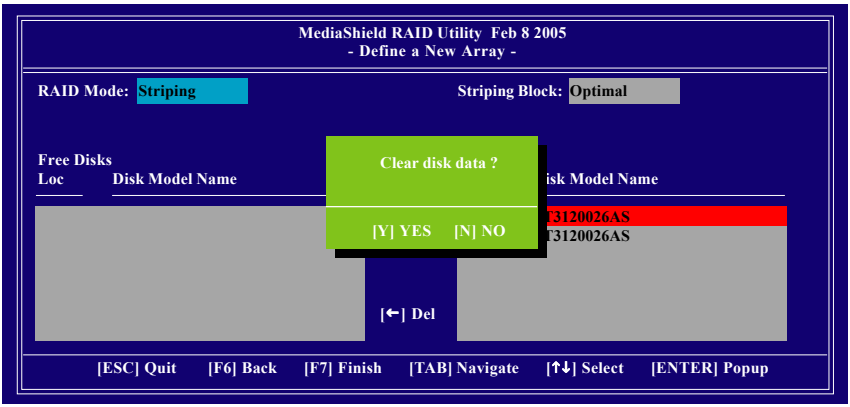


Figure 24

Step 5:
Install the NVIDIA nForce Driver Package while in Windows 2000 and reboot the system. Go to **START> Programs>Nvidia Corporation** and select **NVRAID manager**. You should see the single disk RAID array (in striping mode) that was created from the boot disk. Select the single boot disk RAID Array by clicking on it. Select **Convert Array** under the **System Tasks** and select **Next** following the instructions. Select the desired type of RAID array you want to convert and then select **Next**. You are prompted to select the desired Free Disk(s) to add to the bootable RAID array. Press **Finish** then NVRAID will start converting the single disk RAID array into a multi-disk RAID array in a bootable format.
Note: Conversion may take 1~2 hours depending on disk size.

Solutions 2:
Users must create a combination installation CD that includes Windows 2000 and Service Pack 3 or Service Pack 4 fixes integrated in. To create the combination installation CD, refer to the following website:
http://www.microsoft.com/windows2000/downloads/servicepacks/sp4/HFdeploy.htm

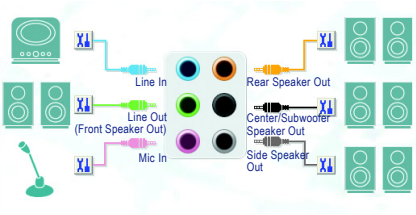
Note: If users choose not to install Windows 2000 Service Pack 3 or 4, RAID is still supported on Windows 2000. However, users will not be able to create a bootable RAID volume.

4-1-5 2- / 4- / 6- / 8- Channel Audio Function

Introduction

This motherboard provide 6 audio connector. You are able to use 2-/ 4-/6-/8-channnels audio feature by audio software selection.

Introduction of audio connectors:

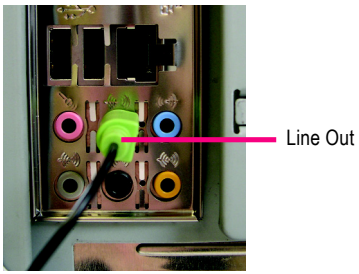


You may connect CD-ROM/DVD-ROM, walkman or others audio input to Line In.
The front channels or earphone can be connected to Line Out (Front Speaker Out).
Connect microphone to Mic In.
Connect the rear channels to Rear Speaker Out.
Connect the Center/Subwoofer channels to Center/ Subwoofer Speaker Out.
Connect the side channels to Side Speaker Out.
The installation of audio software is very simple. Please follow the steps to install the function. (Following pictures are in Windows XP)

Stereo Speakers Connection and Settings:

We recommend that you use the speaker with amplifier to acquire the best sound effect if the stereo output is applied.

STEP 1:
Connect the stereo speakers or earphone to "Line Out".

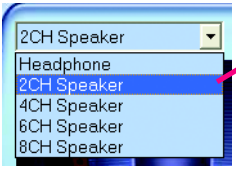


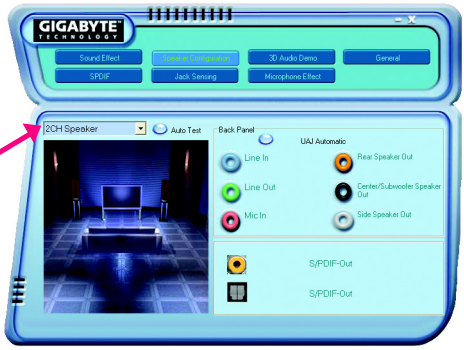
STEP 2 :
Following installation of the audio driver, you find a Sound Effect icon on the lower right hand taskbar. Click the icon to select the function.





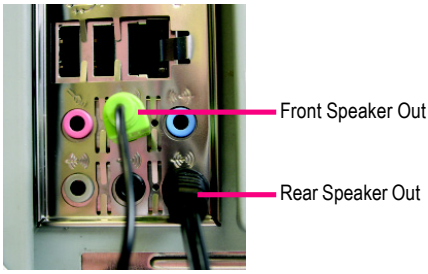
STEP 3:
Click "Speaker Configuration" then click on the left selection bar and select "2CH Speaker" to complete 2 channel audio configuration.





4 Channel Audio Setup

STEP 1 :
Connect the front channels to "Front Speaker Out", the rear channels to "Rear Speaker Out".



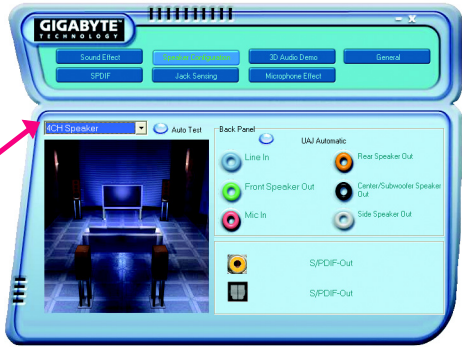
STEP 2 :
Following installation of the audio driver, you find a Sound Effect icon on the lower right hand taskbar. Click the icon to select the function.





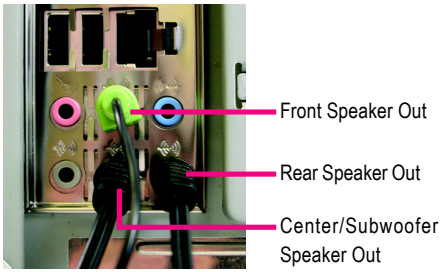
STEP 3:
Click "Speaker Configuration" then click on the left selection bar and select "4CH Speaker" to complete 4 channel audio configuration.





6 Channel Audio Setup

STEP 1 :
Connect the front channels to "Front Speaker Out", the rear channels to "Rear Speaker Out", and the Center/Subwoofer channels to "Center/Subwoofer Speaker Out".



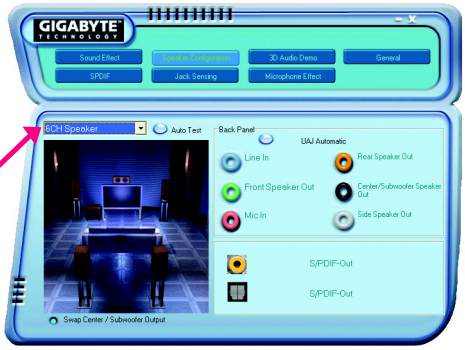
STEP 2 :
Following installation of the audio driver, you find a Sound Effect icon on the lower right hand taskbar. Click the icon to select the function.





STEP 3:
Click "Speaker Configuration" then click on the left selection bar and select "6CH Speaker" to complete 6 channel audio configuration.

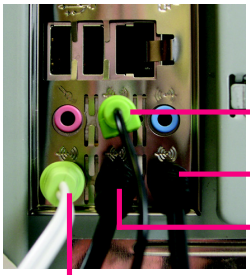




8 Channel Audio Setup

STEP 1 :

Connect the front channels to "Front Speaker Out", the rear channels to "Rear Speaker Out", the Center/ Subwoofer channels to "Center/Subwoofer Speaker Out", and the side channels to "Side Speaker Out".



STEP 2 :

Following installation of the audio driver, you find a Sound Effect icon on the lower right hand taskbar. Click the icon to select the function.

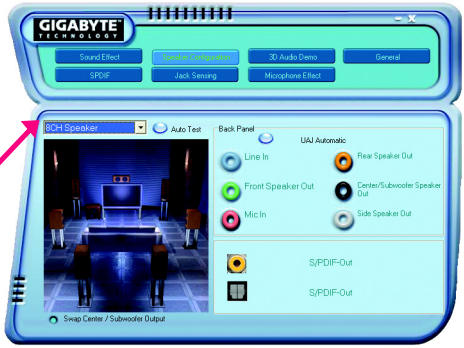




STEP 3:

Click "Speaker Configuration" then click on the left selection bar and select "8CH Speaker" to complete 8 channel audio configuration.





Sound Effect Configuration:

At the sound effect menu, users can adjust sounc option settings as desired.



4-2 Troubleshooting

Below is a collection of general asked questions. To check general asked questions based on a specific motherboard model, please log on to www.gigabyte.com.tw

Question 1: I cannot see some options that were included in previous BIOS after updating BIOS. Why?
Answer: Some advanced options are hidden in new BIOS version. Please press Ctrl and F1 keys after entering BIOS menu and you will be able to see these options.

Questions 2: Why is the light of my keyboard/optical mouse still on after computer shuts down?
Answer: In some boards, a small amount of electricity is kept on standby after computer shuts down and that's why the light is still on.

Question 3: How do I clear CMOS?
Answer: If your board has a Clear CMOS jumper, please refer to the Clear CMOS steps in the manual. If your board doesn't have such jumper, you can take off the on-board battery to leak voltage to clear CMOS. Please refer to the steps below:

Steps:

1. Turn off power.
2. Disconnect the power cord from MB.
3. Take out the battery gently and put it aside for about 10 minutes (Or you can use a metal object to connect the positive and negative pins in the battery holder to makethem short for one minute).
4. Re-insert the battery to the battery holder.
5. Connect power cord to MB again and turn on power.
6. Press Del to enter BIOS and load Fail-Safe Defaults(or load Optimized Defaults).
7. Save changes and reboot the system.

Question 4: Why do I still get a weak sound after turning up the speaker to the maximum volume?
Answer: Please make sure the speaker you are using is equipped with an internal amplifier. If not, please change another speaker with power/amplifier and try again later.

Question 5: Sometimes I hear different continuous beeps from computer after system boots up. What do these beeps usually stand for?
Answer: The beep codes below may help you identify the possible computer problems. However, they are only for reference purposes. The situations might differ from case to case.

→ AMI BIOS Beep Codes

*Computer gives 1 short beep when system boots successfully.
*Except for beep code 8, these codes are always fatal.

1 beep Refresh failure
2 beeps Parity error
3 beeps Base 64K memory failure
4 beeps Timer not operational
5 beeps Processor error
6 beeps 8042 - gate A20 failure
7 beeps Processor exception interrupt error
8 beeps Display memory read/write failure
9 beeps ROM checksum error
10 beeps CMOS shutdown register read/write error
11 beeps Cache memory bad

→ AWARD BIOS Beep Codes

1 short: System boots successfully
2 short: CMOS setting error
1 long 1 short: DRAM or M/B error
1 long 2 short: Monitor or display card error
1 long 3 short: Keyboard error
1 long 9 short: BIOS ROM error
Continuous long beeps: DRAM error
Continuous short beeps: Power error

4-3 POST Error Code

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	1. Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below) 2. PEG slots Auto-Configuration
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
03h	Initial Superio_Early_Init switch.
05h	1. Blank out screen 2. Clear CMOS error flag
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
16h	Initial Early_Init_Onboard_Generator switch.
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.

POST (hex)	Description
1Dh	Initial EARLY_PM_INIT switch.
1Fh	Load keyboard matrix (notebook platform)
21h	HPM initialization (notebook platform)
23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD¡¦s legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5.Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
25h	PCI Bus Initialization
26h	Init clock Generator
27h	Initialize INT 09 buffer
29h	1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onboard IDE controller. 4. Measure CPU speed
2Bh	Invoke video BIOS.
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed .....
33h	Reset keyboard except Winbond 977 series Super I/O chips.
3Ch	Test 8254
3Eh	Test 8259 interrupt mask bits for channel 1.
40h	Test 8259 interrupt mask bits for channel 2.
43h	Test 8259 functionality.
47h	Initialize EISA slot
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program write allocation for AMD K5 CPU 64K page.
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.

POST (hex)	Description
50h	Initialize USB
52h	Test all memory (clear all extended memory to 0)
55h	Display number of processors (multi-processor platform)
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
59h	Initialize the combined Trend Anti-Virus code.
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onbaord_AUDIO switch.
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
65h	Initialize PS/2 Mouse
67h	Prepare memory size information for function call: INT 15h ax=E820h
69h	Turn on L2 cache
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to “AUTO”.
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM¡K..
77h	Detect serial ports & parallel ports.
7Ah	Detect & install co-processor
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue:
	◆ Clear EPA or customization logo.
	E8POST.ASM starts

POST (hex)	Description
82h	1. Call chipset power management hook. 2. Recover the text fond used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)



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